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THE TREATMENT OF PYOGENIC MENINGITIS — IS INTRATHECAL THERAPY NECESSARY?

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Two studies[1,6] of more than 300 cases of non-tuberculous pyogenic meningitis seen between 1956 and 1958 showed that there was a considerable divergence of opinion between the advocates of 2 therapeutic schemes which gave comparable results. The main point at issue was the lack of a clear indication regarding the need for intrathecal drug therapy. If this could be omitted without prejudice to the patient's recovery, there would be obvious benefits to all concerned. An attempt has therefore been made to obtain data which might decide the point, by comparing results in patients treated with and without intrathecal drugs.

For such a comparison to be of value, a judicious choice of the drugs to be used is imperative. They must have a high diffusion level from blood to cerebrospinal fluid (CSF); those used in my earlier study[1] — 'chloromycetin' and sulphadiazine, with penicillin and streptomycin in reserve — appear to meet that requirement.

The concentrations of various agents in the CSF, compared with blood levels, have been studied by a number of workers. Ross *et al.*[2] found that the concentration of chloromycetin in the CSF was 30 - 50% of that in the blood stream. This was confirmed by Banks *et al.*[3] who also studied other antibiotics and chemotherapeutic agents. Sulphadiazine reached a concentration in the CSF of 50 - 70% of the blood level, and streptomycin 10 - 20%, while 'aureomycin' and 'terramycin' were present in minute amounts only. Seeleman[4] and his co-workers found that the level in the CSF of orally-administered tetracyclines was ¼ - ½ of that in the blood, and that chloromycetin levels in the CSF and blood were approximately equal.

Eagle[5] found, in studying the therapeutic significance of penicillin levels in the blood stream, that 0·03 - 0·1 units per ml. were bacteriostatic and 0·1 - 0·5 units per ml. bacteriocidal. It would be reasonable to assume that similar levels in the CSF would have the same therapeutic significance. Inflammation increases the diffusion rate of penicillin into the CSF.[7] After 20,000 to 40,000 units, given intramuscularly, CSF concentrations of up to 0·35 units per ml. may be found and the same levels may be attained with doses of 10,000 - 20,000 units in infants. Cooke and Goldring[8] found levels of 0·1 - 0·4 units per ml. with this dosage. Fortified procaine penicillin injection, i.e. procaine penicillin with benzylpenicillin, combines the advantage of soluble penicillin, reaching a maximum plasma concentration in 10 - 15 minutes, with the slower long-acting procaine penicillin, reaching maximum plasma concentrations within 1 - 2 hours and then decreasing slowly over 24 hours. This should give reasonably high dosage in the CSF.

In an attempt to evaluate intrathecal chloromycetin therapy, 71 patients with pyogenic meningitis were studied at the Red Cross War Memorial Children's Hospital and Groote Schuur Hospital, Cape Town, over a 12-month period, September 1958 - August 1959.

PRESENT SERIES

Management

When the diagnosis of pyogenic meningitis was made, at lumbar puncture in the outpatient or casualty department, a loading dose of chloromycetin, 25 mg. per lb. body weight, was given intramuscularly and the first quarter of the daily sulphadiazine dosage of 2 gr. (120 mg.) per lb. was given orally. This was done to ensure immediate treatment, which was otherwise liable to be delayed for a few hours while the CSF was examined and the formalities of admission were completed. Intramuscular chloromycetin was continued in the ward at a dosage of 50 mg. per lb. per day for at least 24 hours or until vomiting had stopped; thereafter it was given orally. Sulphadiazine was continued orally at the above dosage, divided into 4 doses and given 6-hourly. Other antibiotics were added only if (*a*) organisms were present in the CSF after 48 hours of treatment; or (*b*) there was clinical deterioration. This included a rise in temperature, no improvement in the level of consciousness, development of central-nervous-system localizing signs, or the presence of subdural effusions. If these effusions were found, subdural taps were done daily until negative. In pneumococcal, streptococcal, and staphylococcal meningitis the additional antibiotic when required was fortified procaine penicillin in 1 daily dose of 10,000 units per lb. Similarly streptomycin was added for cases due to *H. influenzae*, *B. proteus*, or salmonella organisms in a dosage of 20 mg. per lb. divided into morning and evening injections. Systemic therapy was maintained for 1 week after the temperature had fallen to normal, or for a minimum period of 10 days from the time it began.

It was planned originally that alternate cases were to receive intrathecal therapy at the initial lumbar puncture in the outpatient department. This was to be 200 μg. of chloromycetin and it was to be repeated daily in the ward until the CSF had a normal sugar content and did not contain more than 40 - 50 cells per ml., mostly lymphocytes. Unfortunately this regime could not be adhered to strictly because of the difficulty in obtaining and preparing intrathecal chloromycetin. There was no

selection of cases, however, and alternate cases received intrathecal chloromycetin when this was available. Otherwise no intrathecal therapy was given at all. This accounts for the disproportionately greater number in all groups who did not receive intrathecal treatment. The allotment of cases was, therefore, much the same as if a random sample had been taken, since the clinicians had no control over the supplies of chloromycetin and the form of treatment was decided before the organism was known.

Patients Treated

Patients below the age of 1 month have been excluded from the series, since in neonatal meningitis the commonest causal organisms are of the enteric group, mainly *B. coli*. The prognosis is notoriously bad, and the duration of illness is likely to be too short for an enquiry such as this. Apart from neonatal cases, there were 71 cases of pyogenic meningitis at the Red Cross War Memorial Children's Hospital and Groote Schuur Hospital, Cape Town, during the period of this investigation (September 1958 - August 1959). Of these, 24 were due to *D. pneumoniae*; 26 to *H. influenzae* or *H. parainfluenzae*; 12 showed no organism on Gram's stain or on culture; and 9 were due to organisms unusual in these hospitals, of which 2 were *N. meningitides*, 2 *Proteus mirabilis*, 3 salmonella, 1 *Klebsiella aerogenes*, and 1 a haemolytic streptococcus.

RESULTS AND DISCUSSION

Table I shows the race, sex, and age range in the different groups of infections. The preponderance of Coloured children is in keeping with past experience, but there is no obvious reason for the higher incidence in boys. The average age for the pneumococcal and influenzal groups was 1 year 7 months and 1 year 2 months respectively, fortuitously making these groups comparable in this respect. The average age for the abacterial group was 4 years 5 months and for the fourth (assorted) group, 5 months. Table II shows the overall results in respect of deaths, sequelae and apparently complete recovery. The survivors have been divided into those who showed some residual damage and those who made an apparently complete recovery.

TABLE I. RACE, SEX, AND AGE RANGE OF 71 PATIENTS WITH PYOGENIC MENINGITIS

Organisms	*Race*			*Sex*		*Age range*
	W	*C*	*B*	*M*	*F*	
Pneumococci ..	3	18	3	15	9	1 month - 5½ years
H. influenzae ..	5	21	0	16	10	3 months - 4¾ years
No organisms ..	0	10	2	8	4	3 months - 9 years
Various organisms	0	7	2	7	2	1 month - 11 months
Total	8	56	7	46	25	

W=White, C=Coloured, B=Bantu, M=male, F=female.

TABLE II. OVERALL RESULTS

Organisms	*Cases*	*Deaths*	*Sequelae*	*Complete recoveries*
Pneumococci ..	24	7 (29%)	3 (12%)	14 (58%)
			17 (71%)	
H. influenzae ..	26	4 (15%)	3 (11%)	19 (73%)
			22 (85%)	
No organisms ..	12	—	2 (17%)	10 (83%)
Various organisms	9	3 (33%)	1 (11%)	5 (55%)
			6 (66%)	

Of 24 patients with pneumococcal meningitis (Table III), 11 received intrathecal (IT) therapy; 13 did not. Of the IT group, 6 (54%) recovered completely compared with 8 complete recoveries (61%) in the non-IT group. There were 3 deaths (27%) and 2 cases with sequelae (18%) in the IT group, compared with 4 (30%) and 1 (7%) respectively in the non-IT group. It would appear that omission of intrathecal therapy in pneumococcal meningitis did not handicap the prospects of recovery or increase the sequelae.

TABLE III. COMPARISON OF RESULTS WITH AND WITHOUT INTRATHECAL TREATMENT

Organisms	*Treatment*	*Deaths*		*Sequelae*		*Well*		*Total*
		No.	*%*	*No.*	*%*	*No.*	*%*	
Pneumococci (24 cases)	IT	3	27	2	18	6	54	11
	No IT	4	30	1	7	8	61	13
H. influenzae (26 cases)	IT	2	18	2	18	7	64	11
	No IT	2	13	1	6·6	12	80	15
No organisms (12 cases)	IT	—	—	—	—	2	100	2
	No IT	—	—	2	20	8	80	10
Various organisms (9 cases)	IT	3	75	—	—	1	25	4
	No IT	—	—	1	20	4	80	5

IT=intrathecal treatment.

In the influenzal group the results of the analysis are similar, the bias being in favour of omitting IT treatment. If the pneumococcal and influenzal groups are combined (Table IV*a*), as might be done legitimately in view of the comparable age range and comparable prognosis in the earlier series which I reported,[1] the results are not strikingly different on comparing the two forms of therapy though, again, the simpler treatment gave a larger proportion of complete recoveries. If all the more dangerous types of pyogenic meningitis (Table IV*b*) are considered together, i.e. excluding the more benign abacterial forms, the same result is obtained. When the results of the whole series are reviewed (Table IV*c*) the figures show quite

TABLE IV. COMPARISON OF RESULTS IN VARIOUS GROUPS OF INFECTIONS

Infection	*Treatment*	*No. of cases*	*Survivors*	*Well*
(*a*) *D. pneumoniae* + *H. influenzae*	IT	22	17 (77%)	13 (59%)
	No IT	28	22 (78%)	20 (71%)
		50		
(*b*) *D. pneumoniae* + *H. influenzae* + various organisms	IT	26	18 (69%)	14 (54%)
	No IT	33	27 (81%)	24 (72%)
		59		
(*c*) All 4 groups	IT	28	20 (71%)	16 (57%)
	No IT	43	37 (86%)	32 (74%)
		71		

IT=intrathecal treatment.

clearly that intrathecal therapy cannot be regarded as essential.

It remains to show whether there were other features influencing the outcome or other aspects of the treatment which may have to be taken into account in coming to a final decision. Those which can be reduced to tabular form are shown in Table V. Our knowledge of the

TABLE V. OTHER FACTORS INFLUENCING RESULTS

	IT group %	*Others* %
Had treatment before admission:		
Whole series	39	23
D. pneumoniae and *H. influenzae* groups	32	32
Had fits before admission	50	28
Depressed consciousness on admission	54	21
Localizing signs on admission	61	58
Duration of fever—survivors	6·6 days	6·8 days
Duration of systemic treatment—survivors	16·2 days	16 days
Duration of intrathecal treatment	9 days	—
Survivors	71	86
Complete recoveries	57	74

IT=intrathecal treatment.

duration of illness before admission is so unreliable, because of the vague and inaccurate histories given by some parents, that no attempt has been made to assess that very important point. The state of nutrition is not taken into account since the number of grossly malnourished children in each group (13 in all) is too small to be considered here. The standard for malnutrition, fixed at two-thirds of the expected weight, showed that 15% of the survivors, 18% of the whole series, and 28% of those who died, fell into this category.

Apart from a greater incidence of fits and depressed level of consciousness, the IT group were at no disadvantage and more of them had received treatment before admission, i.e. relatively early in the illness. After admission the parallel courses of the 2 groups is striking. Although not shown here, in the interests of brevity, the generally accepted criteria for assessing the prognosis during the acute phase of the illness were just as obvious in this series as in the previous one reported by me.[1] Coma and spasticity were bad prognostic signs, *irrespective of the type of treatment employed.*

CONCLUSION

It would appear, then, that when the treatment of pyogenic meningitis is surveyed little can be said in favour of intrathecal drug administration. Whether the choice of drugs used here is the best that can be achieved is another question and will be much more difficult to determine. However, if daily lumbar punctures can be omitted, the patient will be spared the ordeal, and the medical, nursing and laboratory staffs will be relieved of what seems to be unnecessary work. These are far from being insignificant and irrelevant points in deciding the issue. There is certainly no evidence in this study which would support IT medication as an essential or even advisable part of the procedure. Its omission would make things easier for everyone, and not least for the patient.

SUMMARY

1. Seventy-one cases of pyogenic meningitis were studied, consisting of 4 main groups caused by *D.pneumoniae, H.influenzae,* no demonstrable organism, and a mixed group of organisms.

2. The results of treatment with and without intrathecal (IT) chloromycetin are compared.

3. The overall survival rate with IT therapy was 71% and without it 86%. Complete recovery rates were 57% and 74% respectively.

4. The incidence of a number of features which might affect the choice of treatment is shown and their influence in this series is considered briefly.

5. The general conclusion is that any benefit derived from injection of drugs into the theca is very doubtful and that the benefit to the patient and his attendants from omission of this procedure would be considerable.

My thanks are due to Dr. J. G. Burger, Medical Superintendent, Groote Schuur Hospital, and Dr. J. F. W. Mostert, Medical Superintendent, Red Cross War Memorial Children's Hospital, Cape Town, for kind permission to publish these cases; to Prof. F. J. Ford and Dr. M. D. Bowie for invaluable help and encouragement; and to Drs. J. D. L. Hansen, P. Smythe and R. McDonald for kind cooperation.

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KNOOP IN DIE DERM

'N BESPREKING VAN TWEE GEVALLE

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Die term ,knoop in die derm' word hoofsaaklik gebruik deur leke en, hoewel dit soms spesifiek mag dui op intussusceptum of volvulus, dek dit waarskynlik die hele veld van dermverstopping. Af en toe word knope werklik tydens laparotomie vir dermverstopping gevind. Hierdie knope vorm gewoonlik rondom 'n kongenitale of verklewingsband en slegs een lus van derm, gewoonlik die dunderm, is hierby betrokke.

Die 2 gevalle, hier beskryf, is eienaardig omdat die knoop in albei gevalle gevorm is tussen die colon sigmoideum en 'n dundermlus wat andersins normaal voorgekom het, sonder enige verklewings of band.

Geval 1

'n Bantoevrou, 25 jaar oud, is op 28 November 1955 in die Kimberley-hospitaal gesien 4 uur na 'n moeilike bevalling in die kraamafdeling. Die pasiënt het kort na die geboorte begin kla van hewige buikpyn en aanhoudende braking.

By ondersoek was sy so geweldig geskok dat sy byna polsloos was. Die buik was baie pynlik en hard. 'n Vae massa is egter waargeneem links van die vergrote nageboortelike uterus.

Maagsuiging is toegepas en na bloedoortappings om haar skoktoestand te verhelp, is 'n laparotomie gedoen deur 'n linker paramediane snit.

By ope buik is gevind dat die massa bestaan het uit ineengestrengelde gangreneuse dermlusse met beide dun- en dikderm betrokke. Die beeld was so verwarrend dat aansienlike tyd gebruik is om die oorsaak en werklike patologie van die toestand te probeer vasstel. Uiteindelik is die inhoud van die uitgesette gangreneuse dikdermlus met 'n naald uitgesuig. Hierna kon hierdie lus met die hulp van 'n deppertang onder die ander lusse deurgedruk word, en het die ware toestand duidelik geword.

Reseksie van die gangreneuse dundermlus, wat uit omtrent 2½ voet ileum bestaan het, is uitgevoer met anastomose tussen die oorblywende eindes.

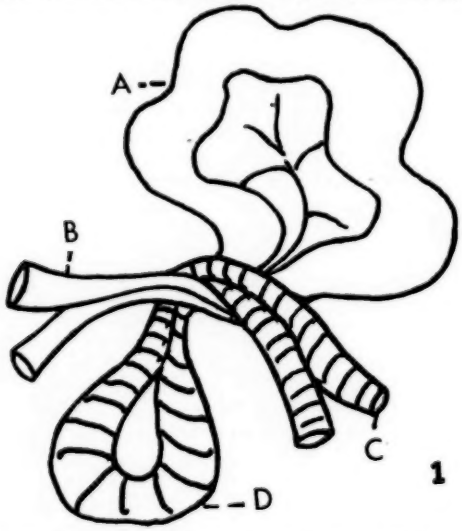
Die gangreneuse sigmoïed is ook weggesny en die dermstompe as 'n dubbelloop-kolostomie deur 'n aparte snit uitgebring. Die buik is met dreinering gesluit.

Na die operasie het die pasiënt voorspoedig herstel. Die kolostomie is na 2 maande gesluit.

Geval 2

'n Bantoeman, 24 jaar oud, is op 20 Februarie 1960 in die Kimberley-hospitaal gesien. Omtrent 12 uur tevore het hy in die nag wakker geword met geweldige buikpyn wat vererger het, gepaard met braking van groot hoeveelhede slegte vog.

By ondersoek was die buik geweldig opgesit, hard, en pynlik.



Afb. 1. Skematiese tekening van die knoop. A=Gangreneuse dundermlus. B=Basis van dundermlus. C=Basis van sigmoïed. D=Gangreneuse colon sigmoideum.

Dermklanke was nie waarneembaar nie. Die pasiënt was geskok en 'n groot hoeveelheid donker vog is deur 'n maagbuis uitgesuig.

Dit was duidelik dat die pasiënt aan dundermverstopping ly en, nadat sy toestand deur die gebruiklike metodes verbeter het, is 'n laparotomie gedoen deur 'n regter paramediane snit.

Groot lusse gangreneuse dunderm en 'n gangreneuse lus dikderm is gevind met 'n verwarrende ineenstrengeling. Weer was dit baie moeilik om 'n akkurate denkbeeld te vorm van die toestand, maar met die ondervinding van die vorige geval, is die dikdermlus leeggesuig deur 'n naald en die lus onder die ander deurgedruk om die knoop los te maak.

Die operasie is voltooi op dieselfde manier as in die vorige geval. Omtrent 4 voet van die dunderm is weggesny.

Herstel van die pasiënt is vertraag deur lastige diarree. Die kolostomie is op 1 April 1960 gesluit en die pasiënt is in 'n goeie toestand ontslaan.

BESPREKING

Die toestand word skematies verduidelik in die meegaande tekening (Afb. 1). Dit is egter onmoontlik om die verwarrende beeld van uitgesette gangreneuse sowel as niegangreneuse dermlusse rondom die knoop verstaanbaar weer te gee.

Ons het hier dus te doen met 'n eenvoudige halwe knoop tussen 'n lus van sigmoïed en 'n lus dunderm. Geen abnormaliteite is in die lusse opgemerk nie, behalwe dat die sigmoïed miskien langer as by die gemiddelde persoon was.

Hoe so 'n knoop moontlik is, of hoekom dit nie meer dikwels voorkom nie, is vir my totaal onverstaanbaar. Na 'n lang soektog in die beskikbare mediese letterkunde kon 'n beskrywing van soortgelyke gevalle nie gevind word nie.

Die volgende punte is van praktiese belang tydens die operasie:

1. Die gelyktydige aanwesigheid van gangreneuse dun- en dikderm in 'n geval met verwarrende ineenstrengeling, wanneer volvulus van die caecum duidelik uitgeskakel is, is kenmerkend van die toestand.
2. Ontknoping word bespoedig deur aspirasie van die beklemde dikdermlus wat dan makliker gereduseer kan word.

SUMMARY

Two, perhaps unique, cases are described where, in the absence of adhesions or other pathology, an ordinary half-knot formed between a loop of sigmoid colon and a loop of small bowel resulting in gangrene of both loops. Helpful points in the recognition of a most confusing state of affairs and in the operative technique are described.

Hartlike dank is verskuldig aan Dr. G. de V. de la Bat, Superintendent van die Kimberley-hospitaal, vir toestemming om besonderhede van die 2 pasiënte te verskaf.

DIE SUID-AFRIKAANSE MEDIESE KONGRES, 24-30 SEPTEMBER 1961, KAAPSTAD

Die Drie-en-veertigste Mediese Kongres van die Mediese Vereniging van Suid-Afrika sal gehou word in *Kaapstad* op 24 - 30 September 1961. Volledige besonderhede aangaande die Kongres word van tyd tot tyd in die *Tydskrif* gepubliseer. Alhoewel dit nog betreklik vroegtydig is, word lede wat van plan is om die Kongres by te woon, aangeraai om hul Voornemingsvorms so gou as moontlik in te stuur.

Voornemende besoekers aan die Kongres word ook versoek om dit in die gedagte te hou *dat hotel-akkommodasie in Kaapstad betreklik beperk is* en dat hulle die nodige besprekings so vroeg as moontlik moet maak. Die Reisburo van die Suid-Afrikaanse Spoorweë is aangestel as die amptelike agent vir die doel. Lede word versoek om met hul plaaslike agente, aan wie volledige besonderhede gestuur is, in verbinding te tree in hierdie verband. In die klein plattelandse dorpe sal die naaste stasiemeester die saak hanteer.

Reël u besprekings nou om teleurstelling te voorkom. In die geval van enige moeilikheid, tree asseblief in verbinding met dr. J. C. Coetzee, Saamroeper, Subkomitee vir Verblyf, Kongreskantoor, 43ste Suid-Afrikaanse Mediese Kongres, Posbus 643, Kaapstad.

South African Medical Journal : Suid-Afrikaanse Tydskrif vir Geneeskunde

EDITORIAL : VAN DIE REDAKSIE

THE CARE OF THE AGED

One of the subjects which will be discussed at a plenary session of the South African Medical Congress, to be held in Cape Town during the week 24 - 30 September, is the problem of care of the aged. We have no doubt that this is an excellent choice of subject. More people are today living longer than ever before, and it is hardly necessary to quote statistical evidence to prove the fact that the average expectancy of life for the newly born has risen from 40 years in 1890 to ±75 years today.

The situation, as we pointed out on a previous occasion,[1] can be summarized in quantitative terms as follows:

According to Thompson,[2] in 1950 there were 5 million people above the age of 65 in Great Britain. It is estimated that in 1975 this figure will be approximately 8 million. In 1952 there were 10 million people in America above the age of 65 and, according to an estimation by Bortz,[3] this figure was 14 million in 1958. On the basis of figures provided by the Director of Census and Statistics there were, in 1957, approximately ¾ million people of all races and sexes in South Africa above the age of 65. It is, therefore, more than likely that there are today over a million people in our country who are 65 years of age or older.

When the problem of care of the aged in all its aspects is being discussed, it should be kept in mind that there are two main facets to the problem. In the first instance there is the purely medical aspect of the matter. Examples of problems in this connection are the specific physical conditions of elderly people and the changing pattern of illness in general, *viz.* the fact that wasting diseases have now become one of the major threats to life. During recent years an entire geriatric science has developed around this aspect of the problem of old age. The discussions at Congress will almost certainly deal with these particular aspects of the problem.

In the second place there is the equally important social approach to the problem and the share of the community in it. It is this aspect in particular which we should like to discuss here in greater detail. Under this heading the following more specific problems can be listed: (1) the housing of the aged, (2) leisure, and (3) the important question of preparation for old age.

1. *Accommodation.* We are fast becoming a community of city dwellers because the tendency towards urbanization (as is the case in all the countries in the West), is continuing unabated. There is less and less room for elderly folk in the homes and towns from which they come. (According to recent figures supplied by the Bureau for Census and Statistics, 78% of the European population, 77·5% of the Asian people, 64·4% of the Coloured population and 27·1% of the Africans were living in urban areas in 1957.) These figures are certainly much higher today.

We are, however, not only becoming a community of city dwellers, but also a community of flat dwellers and room dwellers. This means that there is, relatively speaking, still less room for elderly people in private homes.

The awakening of the social conscience of the community has, in our day, aroused widespread interest in the care of the aged. In the Cape Province, for instance, the well-known welfare organization, the A.C.V.V., has taken a lead in providing in almost every town excellent old age homes for normal elderly persons. It is difficult to assess and appreciate the full significance of the invaluable service rendered to the community by the establishment of these homes. Similarly, the South African Woman's Federation in the Transvaal has made a distinctive contribution by establishing the first home in the country specially designed for the care and accommodation of persons suffering from early senility. Many other welfare organizations have likewise made valuable contributions to the solution of the problem of caring for the aged.

In the USA and other overseas countries the concept has arisen that the community as a whole should take a greater part in the care of elderly people. This has led to the practice of *foster care* for the aged. In the USA there is, for example, an extensive organization to which people can apply for advice and guidance in connection with problems of foster care. An old woman who has lost her husband and who still has her own home can, for instance, take another old lady as a boarder on the basis of foster care. According to reports this system is most effective. It would seem that some similar undertaking should be introduced in our country.

Furthermore, a comprehensive system of *home nursing* for the aged has developed, making it possible for elderly people to be looked after and nursed in their own homes.

2. *Leisure.* One of the most important problems in the care of the aged is the question of adjustment to a life of leisure. Most elderly people need positive help in this connection. This adjustment is complicated by the fact that many people who are not equipped for a life of leisure are suddenly faced by the terrifying prospect of endless empty hours. To facilitate this adjustment the movement of *day care for the aged* has originated in the USA and Europe. Day clinics have been established which elderly people can attend and where they can occupy themselves in practical and creative activity. The indispensable illusion of still having a daily task to carry out is thus kept alive. This leads to emotional fulfilment in the lives of many elderly people, and is another approach to the problem of the care of the aged which should be actively developed in our country.

3. *Preparation for old age.* It is generally accepted that a serene and happy old age can be attained by a few

fortunate people. Mayer-Gross[4] points out that people engaged in creative and intellectual work show a relatively small degree of deterioration and degeneration; many of them, in fact, attain the peak of their achievement in their old age. The essence of the matter is that preparation for old age should begin early in life. This process can be facilitated by education, the press, and the radio. In practical terms this problem could be approached most effectively in all its aspects by national organizations aiming at the promotion of adult education.

On medical grounds it can be safely stated that mental deterioration is not necessarily the most important consequence of the aging process, and the testimony of many people who have lived long and happily bears out the fact that many elderly people can look forward to a full and satisfying life. To contribute a share towards the attainment of this ideal, by fostering the mental and physical health of the patients under his care, should be the constant aim of every responsible doctor.

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'N NAGRAADSE MEDIESE SKOOL OP BLOEMFONTEIN

Toe ons by 'n vorige geleentheid oor hierdie onderwerp geskryf het,[1] het ons onder meer gesê dat die behoefte aan vermeerderde geleenthede vir nagraadse studie sterk gevoel word in ons land. Ons het ook aangetoon dat die behoefte aan nagraadse opvoeding vir geneeshere veel meer behels as net die reël en organiseer van opknappingskursusse, en dat die gevoel in mediese kringe bestaan dat 'n navorsingsinrigting gestig behoort te word wat hom uitsluitlik op nagraadse studie sal toelê en wat hom daarop sal instel om die akademiese ideaal van die opvoeding van geneeshere na te streef, liewers as die blote oordra van feitekennis. Ons het toe ook die aandag daarop gevestig dat, as gevolg van 'n besluit van die Sentrale Afdeling van die O.V.S. en Basoetoland-tak van die Mediese Vereniging, 'n Nagraadse Skool Beplanningskomitee benoem is om verder in die saak te handel.

Dit is nou vir ons aangenaam om die mededeling te kan maak dat hierdie Beplanningskomitee nog steeds aktief is en alreeds veel vermag het. Elders in hierdie uitgawe van die *Tydskrif* plaas ons die verslag oor die werksaamhede van die Komitee wat dr. J. W. van der Riet, die Ere-sekretaris, onlangs aan die Sentrale afdeling van die Mediese Vereniging voorgelê het. In hierdie verslag toon dr. Van der Riet onder andere aan dat die Uitvoerende Komitee van die Provinsiale Raad van die O.V.S. amptelike erkenning aan die Beplanningskomitee verleen het, dat 'n histopatoloog in die personeel van die Bloemfonteinse tak van S.A.I.M.N. aangestel is, dat die Provinsiale Administrasie alreeds die planne goedgekeur en die nodige fondse beskikbaar gestel het vir die bou van 'n patologiese laboratorium en 'n lykskouingsaal, dat planne beraam is vir die bou van 'n anatomiese disseksiesaal, dat die planne aanvaar is vir die bou van 'n moderne lesingsaal, en dat die skepping van spesiale registrateursbetrekkings deur die Direkteur van Hospitaaldienste goedgekeur is.

Op grond van hierdie indrukwekkende lys van vorderinge wat gemaak is as gevolg van die optrede van die Beplanningskomitee, wil dit voorkom of Bloemfontein eersdaags in staat sal wees om sistematies nagraadse onderrig in die basiese vakke aan te bied vir voornemende nagraadse mediese studente. In ons land sal dit 'n besonder belangrike prestasie wees.

In die eerste plek sal dit 'n bevredigende prestasie wees vir die groepie yweraars op Bloemfontein wat geen steen onaangeroerd gelaat het om hul doel te bereik nie. Verder sal dit 'n belangrike gebeurtenis wees vir almal op Bloemfontein wat in die kuns en die wetenskaplike agtergrond van die moderne mediese praktyk belang stel. Ook vir nagraadse mediese studente dwarsoor die land, of hulle nou ook al akademiese studie aan 'n universiteit, of kliniese studie onder leiding van die Kollege van Interniste, Chirurge en Ginekoloë van Suid-Afrika in gedagte het, sal die oprigting van 'n spesifieke nagraadse skool van besondere groot belang wees. En eindelik sal so 'n nagraadse inrigting ontsaglik veel daartoe bydra om die naam en status van die mediese beroep in ons land te verhoog.

As amptelike orgaan van die Mediese Vereniging wil ons graag langs hierdie weg ons heelhartige ondersteuning toesê aan die dinamiese poging van ons Bloemfonteinse kollegas om ook in ons land 'n volwaardige nagraadse mediese skool te stig en in stand te hou.

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DIMETHYLDIGUANIDE ('GLUCOPHAGE', LA 6023) IN DIABETES MELLITUS

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Guanidine was known in 1918 to have a blood-sugar-lowering action.[10] A derivative, decamethylene diguanidine, was used in the treatment of human diabetes, but was abandoned because of its toxicity.[8] Since the sulphonylureas have successfully entered medicine as hypoglycaemic agents, there has been a resurgence of interest in guanidine derivatives — particularly in the diguanides.

These compounds were found to be virtually non-toxic, yet they retained a hypoglycaemic effect. Phenethyldiguanide ('DBI', 'phenformin') has been extensively used,[5]

but the high incidence of gastro-intestinal irritation has limited its use in diabetes.[6] It has been claimed that dimethyldiguanide produces fewer of these side-effects, but there are few reports on its use in the literature.[1,2,7,8]

In Groote Schuur Hospital the effects of dimethyldiguanide* have been observed in a selected group of diabetics, the majority of whom had previously been treated with other hypoglycaemic agents. Our early results and impressions are reported.

Mode of Action and Side-effects

The diguanides are generally believed to act by inhibiting certain enzymes which take part in oxidative glycolysis in the 'Krebs cycle'.[4] This has the effect of greatly stimulating anaerobic breakdown of glucose, and so promoting hypoglycaemia entirely independently of insulin.

One effect of this action is a tendency to build up ketone bodies and produce systemic acidosis at comparatively low blood-sugar levels.[9] Although we have not observed this phenomenon ourselves, the possibility should be borne in mind; and it is probably preferable not to combine diguanides with a diet which is very low in carbohydrate.

To counteract the gastro-intestinal side-effects of nausea, vomiting, and diarrhoea, it is advisable, where possible, to start therapy with 1 tablet daily, taken with or directly after a meal. The dosage is gradually increased to a maximum of 2 tablets 3 times daily, taken with meals (3 G. daily). Antacids or kaolin mixture may also help.

SUBJECTS AND METHODS

Glucophage was administered to 62 patients featured in this report, in doses ranging, as a rule, from 3 to 6 tablets daily (i.e. 1·5 - 3 G.), given as described above. In a few cases a smaller dose of 2 tablets daily sufficed. The response was assessed by fasting blood-glucose estimations and in some cases by glucose-tolerance tests as well. Semi-quantitative urine tests were carried out in all cases, and 24-hour quantitative glucose analyses in some.

Glucophage was tried in the following groups of patients:

1. In patients treated with sulphonylureas, where these agents were found to be ineffective or not tolerated. In some patients who had been on a variety of sulphonylureas, the comparative effect of glucophage was assessed.

Where only a partial response to the sulphonylureas or glucophage alone was obtained, the effect of treatment with a combination of these agents was tried.

2. In patients on insulin treatment (*a*) in the maturity-onset type, to whom glucophage was administered and insulin withdrawn slowly or abruptly; and (*b*) in some unstable juvenile diabetics, in an attempt to obtain better control.

All patients included here were observed for several weeks before a 'good' assessment was made.

* Hereafter called 'glucophage', the trade name used by Messrs. Rona Laboratories, and in the beginning kindly supplied to us for trial by Messrs. Westdene Products (Pty.) Ltd.

RESULTS

'Improved diabetic control' indicates:

(*a*) That fasting blood-glucose estimations fell to a normal level or a level below 140 mg. on glucophage alone, or

(*b*) a glucophage response which was distinctly better than that with the sulphonylureas, or

(*c*) a more satisfactory control obtained by the addition of glucophage to the treatment in patients previously treated with chlorpropamide alone or insulin alone, or a satisfactory reduction of the insulin requirement.

Maturity-onset Group

There were 47 patients in this group. The majority had failed to be properly controlled by any sulphonylurea drug. Improved diabetic control was obtained in 27

TABLE I. CONTROL OF DIABETIC PATIENTS

Type of diabetes	*Total patients*	*Good response to*			*Total*	
		Glucophage alone	*Gl. + chlor.*	*Gl. + insulin*	*Good*	*Poor*
Maturity-onset	47	20	5	2	27	20
Juvenile	12	0	—	6	6	6
Chronic pancreatitis	2	1	—	1	2	0
Total pancreatectomy	1	0	—	0	0	1
	62					

(Table I). In 20 of these, glucophage alone was satisfactory, in 2 glucophage was combined with a reduced dose of insulin, and in 5 it was satisfactorily combined with 1 or 2 tablets of chlorpropamide daily.

In 4 of the 'failed' cases, glucophage was actually found to be inferior to chlorpropamide in controlling the diabetes.

The following cases illustrate a good response to glucophage:

1. G.H., a middle-aged, non-obese European female, poorly controlled with insulin, was successfully managed on tolbutamide for 2 years, after which 'secondary tolbutamide failure' occurred.

At this stage there was a very good response (fasting blood sugar and urine tests) to chlorpropamide, but the patient complained of gastro-intestinal upset with this drug.

Isobuzole (a thiadiazole derivative) failed to control the hyperglycaemia (fasting blood sugar 200 - 300 mg.). Glucophage, 2·5 G. daily, has produced a satisfactory response. Fasting blood-sugar levels have remained near normal over the past 10 months.

2. C.v.N., a middle-aged European male, failed to respond to all the sulphonylureas — tolbutamide, chlorpropamide, metahexamide, and isobuzole.

For the past 8 months his control on glucophage alone (1·5 G. daily) has been better than with 35 units of insulin. The fasting blood-sugar levels have been normal and urine tests sugar-free at all times. There has also been an improvement in general well-being.

Juvenile Group ('Ketosis-prone')

Twelve patients with the 'juvenile' type of diabetes were given glucophage, most being inpatients of Groote Schuur Hospital at the time. Assessment of the value of glucophage in this group may be extremely difficult, but there was

virtually no doubt that the drug had a considerable effect in allowing a reduction in insulin dosage and an improvement in control in 6 cases. In no case was glucophage alone satisfactory. Two of the 'successful' patients might have been classed as 'brittle' before glucophage was given.

Example. U.M., a Coloured girl of 20 years, had been diabetic for 7 years. Her control on 140 units of insulin per day in divided doses was poor (blood-sugar levels frequently over 300 mg.). On the addition of glucophage, 1·5 G. daily, the control with the insulin dosage, halved to 70 units, was much improved as judged by repeated urine tests and estimations of blood-sugar levels. Previous reduction of insulin dosage had proved impossible.

Chronic Pancreatitis

Glucophage was tried in 2 patients with chronic calcific pancreatitis and diabetes. In both, sulphonylureas had been unsuccessful. In one case, 2 tablets of glucophage very satisfactorily replaced 22 units of lente insulin. In the other patient the maximum of 6 tablets, added to his previous dose of 60 units of insulin, reduced the mean early morning blood-sugar level from 266 to 160 mg. and the level of the 24-hour urinary sugar from 90 to 21 G.

Total Pancreatectomy

In this single case, glucophage had no discernible effect.

Toxic Effects

No serious toxic effects were seen.

Symptoms of gastro-intestinal irritation were encountered by about 25% of patients and precipitated discontinuation of tablets in 6 of the 62 patients.

There appears to be no tendency for patients to gain weight on glucophage. This may be an advantage, particularly in the obese, and is possibly due to some interference with the appetite.

DISCUSSION

The addition of glucophage to the current therapy for diabetes has made it possible to treat an additional number of maturity-onset patients satisfactorily with oral agents alone.

Certain patients who failed to respond to the sulphonylureas showed a satisfactory response to glucophage or to a combination of glucophage and chlorpropamide.

In many patients the use of the oral agents has improved diabetic control. It is still too early to judge whether oral therapy will influence the late complications, but it is hoped that the better control achieved may reduce the liability to diabetic vascular disease.

The administration of glucophage may improve the control in some 'brittle' diabetics of juvenile type, and allow a lesser dose of insulin to be taken. It may thus render these patients less liable to the hazards accompanying hyperglycaemia and ketosis on the one hand, and hypoglycaemia on the other hand. The failure rate in this group of patients is likely to be high, and the trial is best performed in hospital.

It was noted that control of diabetes with glucophage was not always better than that with the sulphonylureas; in fact it was sometimes worse.

Glucophage was found to enhance the hypoglycaemic effect of chlorpropamide in some cases which were not satisfactorily controlled by either of these agents alone.

We feel it necessary to reiterate that, in the mild, 'maturity-onset' diabetic, dietary control, with weight reduction if necessary, remains the first line of attack. Secondly, no oral drug should be continued over the trial period unless it has been shown to be of definite benefit. Thirdly, it must be clear that the patient is out of control when treated by diet alone, before any oral agent is administered. Finally, mixed therapy should only be given after thorough trial of each agent singly, and also, of course, of dietary measures.

CONCLUSION

Glucophage is an effective blood-sugar-lowering agent in many maturity-onset diabetics. It may be effective when the sulphonylurea hypoglycaemic agents have failed; on the other hand patients who have responded to chlorpropamide may fail to respond to glucophage. It appears to be reasonably safe and to produce considerably less gastro-intestinal irritation than its analogue, phenethyldiguanide. It may be effective in some patients in the absence of endogenous insulin.

SUMMARY

The effect of dimethyldiguanide (glucophage) in 62 selected diabetic patients attending the Groote Schuur Hospital is described. Satisfactory control of the diabetic state was obtained in 27 out of 47 'maturity-onset' patients, in many of whom the sulphonylurea drugs had previously failed.

Of 12 juvenile-type diabetics, glucophage appeared to assist in obtaining better control, and allowed a reduced insulin dosage, in 6. Glucophage was of value in patients with chronic calcific pancreatitis, but had no effect in 1 patient who had undergone total pancreatectomy.

No serious toxic effects have been encountered, though symptoms of gastro-intestinal irritation occurred in about 25%, and necessitated stopping the drug in a small number.

We wish to thank the members of the Diabetes Clinic of Groote Schuur Hospital, who all participated in this pilot clinical trial. This includes, besides clinicians, the nursing, clerical, and biochemical staff.

Costs were partly defrayed by grants from the South African Council for Scientific and Industrial Research to the Endocrine Group and by the Wellcome Trust to one of us. (W.P.U.J.).

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DIPHTHERIA IN DURBAN: MORBIDITY, MORTALITY AND PREVENTION

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In the period 1950 - 1958, 285 residents of Durban died from diphtheria. This unnecessary loss of life, from a disease now so rare in other countries,[1,2] justified an investigation that might lead to its more effective prevention.

MATERIAL AND METHODS

Information on the population and number of notified cases of clinical and fatal diphtheria was extracted from the Annual Reports of the City Medical Officer of Health of Durban.[3] In these, the population is estimated by a formula devised by the Director of Census and Statistics and the notifications are tabulated by race. Excluded from the survey was a small group of patients, domiciled outside the municipal area but treated for diphtheria in Durban ('imported cases'). The data on the extent of prophylactic diphtheria immunization were compiled from questionnaires requesting the following information: (1) child's first name; (2) date and year of birth; (3) residential suburb; (4) length of family residence in Durban; (5) previous history, if any, of diphtheria; (6) immunization against diphtheria, month and year; and (7) immunization by private doctor or at a municipal clinic. This method of investigation presupposes a certain educational level in all sections of the population interrogated. As a whole, it was only the White group which reached the required level. As no other method could be devised for obtaining immunization histories from the other ethnic groups, figures on immunization refer to the White population only. Contact with the children was established through the schools, selected to represent the widest possible cross-section of socio-economic levels in the White population. The questionnaires were distributed early in 1958, filled in by the parents — for both the school child and minor siblings — and returned to the school.

Children under one year of age were excluded from the analysis, since it could be expected that a significant — but unknown — proportion of children in this age group would be less than 6 months old and therefore could not be expected to have been immunized. This made the youngest group smaller, but, on the other hand, it eliminated the uncertainty about their true immunization rate. With this exception, the questionnaires were examined according to criteria given in a previous communication.[4]

RESULTS

Population

The population of Durban (Table I) is classified into the usual 4 major ethnic groups of White, Asian, Coloured and Bantu persons. In 1958, the largest group was Asian, followed by the Bantu, White and Coloured groups. In the last 8 years the population has increased by 42·88%, but the increase in the White section has been considerably slower than in the non-White and, among the non-White groups, the Coloured population has almost doubled itself. As the allocation of prophylactic work between the immunizing organizations is related to race,[2] the shifts in population have a significant bearing on the planning of immunization campaigns.

TABLE I. THE POPULATION OF DURBAN

Year	White	Asian	Coloured	Bantu	Total
1950.. ..	131,932	127,496	12,821	127,496	399,745
1951.. ..	129,380	145,371	14,958	134,451	424,160
1952.. ..	133,261	149,732	15,521	141,174	439,688
1953.. ..	137,253	154,316	17,197	148,230	456,996
1954.. ..	141,370	158,945	17,845	155,642	473,802
1955.. ..	148,800	166,220	18,700	167,500	501,220
1956.. ..	153,260	171,200	19,260	175,880	519,600
1957.. ..	151,678	197,411	23,838	179,157	552,084
1958.. ..	154,763	205,543	25,003	185,835	571,144
% Distribution 1958	27·10	35·99	4·38	32·54	100·01
Increase since 1950	22,831	78,047	12,182	58,339	171,399
Increase as % of 1950 figure ..	17·31	61·22	95·02	45·76	42·88

Notified Diphtheria

The annual number of diphtheria notifications per 100,000 population, hereafter referred to as the 'notification rate', is shown in Fig. 1 and summarized for specified periods in Table II. Until recently diphtheria has been highly prevalent in Durban (Fig. 1). The overall notification rates have declined, somewhat irregularly,

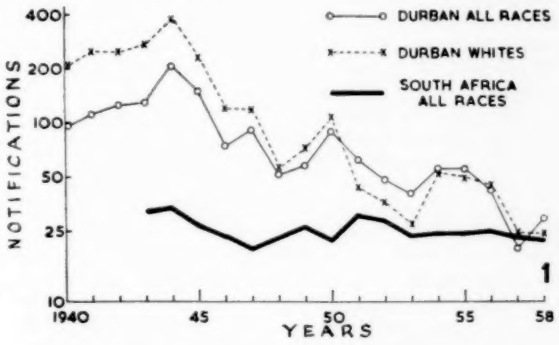

Fig. 1. Annual notifications per 100,000 population in Durban and South Africa.

from 209·4 per 100,000 in 1944 to 20·1 per 100,000 in 1957. Compared with the remarkably constant level for

the Union,[1,8] it appears that the Durban Municipality is succeeding in suppressing a focus of infection in the Union. The disease is encountered in all ethnic groups, illustrated in Table II, which, in its first section, gives

TABLE II. OBSERVED MEAN DIPHTHERIA MORBIDITY AND MORTALITY PER ANNUM IN SPECIFIED PERIODS

Years	Mean annual number of notified cases per 100,000 population				
	White	*Asian*	*Coloured*	*Bantu*	*Total*
1940 - 44	272·38	20·55	386·94	65·70	136·40
1945 - 49	122·00	31·41	176·00	93·21	86·72
1950 - 54	54·89	36·02	128·95	80·75	59·64
1955 - 58	36·42	31·90	73·58	39·61	37·30

Years	Mean annual number of notified deaths per 100,000 population				
	White	*Asian*	*Coloured*	*Bantu*	*Total*
1940 - 44	5·08	1·49	7·50	8·61	4·82
1945 - 49	3·01	4·78	11·49	9·82	5·76
1950 - 54	1·50	6·26	13·85	14·22	7·63
1955 - 58	2·13	6·21	3·97	8·09	5·55

Years	Deaths as % of notifications				
	White	*Asian*	*Coloured*	*Bantu*	*Total*
1940 - 44	1·87	7·25	1·94	13·11	3·54
1945 - 49	2·47	15·22	6·53	10·54	6·64
1950 - 54	2·73	17·38	10·74	17·61	12·79
1955 - 58	5·85	19·47	5·40	20·42	14·87

the mean notification rates by race in 3 periods of 5 years and 1 of 4 years. This method of calculation was considered advantageous since it eliminates annual fluctuations, and emphasizes trends. The table shows that proportionately more cases of diphtheria were reported from the Coloured than from the other groups.

Furthermore, the notification rates in the White and Coloured groups followed the general trend of decline. Preceded by a substantial increase in the notification rate in the earlier periods, proportionately highest in the Asian group, the same pattern of decline has also prevailed among the other ethnic groups in recent years. These comforting observations should not lead to the conclusion that the menace of diphtheria is over. It must be emphasized that the disease in Durban, and in South Africa as a whole, is still common when compared with overseas countries,[1,8] and that it still causes severe loss of life, which is illustrated in the central section of Table II. Probably the most striking feature is that the death rate has remained about 5 per 100,000 population *per annum*, being highest in the Bantu, followed by the Coloured, Asian and White groups. In recent years, however, it would appear that diphtheria has been more malignant in the Bantu and the Asian groups than in other races.

A downward trend in the notification rate, together with an unchanged death rate, is inevitably associated with a deterioration of the case prognosis *quoad vitam*. As is seen from the last section of Table II, the observed overall case mortality has increased approximately 4 times (from 3·54% to 14·87%). In all groups, except the Coloured group, it has increased steadily, and in recent years about 20% of observed diphtheria cases in Bantu and Asian patients ended in death. The possible causes for this striking case mortality will be discussed below.

Immunization Survey

Out of about 4,500 (90%) questionnaires returned, some were excluded because of their incomprehensive content and others, as pointed out above, because they were completed for children under 1 year of age. In 92 (2·14%) cases the individuals were said to have suffered from clinical diphtheria. Since their post-infectious antibody levels were unknown, it was impossible to determine their need for prophylactic immunization, for which reasons also they were omitted from the analysis. After these adjustments the material was reduced to 4,201 questionnaires suitable for tabulation. Assuming age distribution of the White population in Durban and Johannesburg[6] to be identical, our sample represents about 7% of the group investigated, i.e. White persons between 1 and 20 years of age.

The findings are summarized in Table III which shows that about 22% were unimmunized or unable to

TABLE III. DIPHTHERIA IMMUNIZATION AMONG 4,201 WHITE PERSONS UNDER 20 YEARS OF AGE

	Age groups					
	1 - 4	*5 - 9*	*10 - 14*	*15 - 19*	*Total*	*%*
Number of observations	253	1,781	1,606	561	4,201	100
Immunization uncertain or not done ..	64	319	361	187	931	22·16
Primary course	189	1,462	1,245	374	3,270	77·84
Primary course as %	74·70	82·09	77·52	66·67	77·84	
Booster ..	8	695	655	164	1,522	36·23
Booster as % ..	3·16	39·02	40·78	29·23	36·23	

give a convincing immunization history. On the whole, just over 77% had received a primary course, with a slightly increasing trend with falling age, except in the youngest group. This does not necessarily indicate a deterioration of preventive efforts, but is rather a reflection of the late administration of the primary course in some of the children.[2,4] Only about a third of all children, equivalent to about half of those who had had a primary immunization course, received a booster injection. There is little difference in the booster rate in children over 5 years of age, whereas the youngest age group, more in need of a booster, seldom received it early enough. The low booster rates are most unfortunate since the advantage gained by the primary course[7] is not followed up.

As pointed out previously, early administration of the prophylactic is of major importance in the prevention of diphtheria.[5] This aspect, in regard to the time for the administration of the primary course, has been examined and the results are presented in Table IV and in Fig. 2. It

TABLE IV. PRIMARY COURSE OF DIPHTHERIA PROPHYLACTIC IN WHITE CHILDREN UNDER 2 YEARS OF AGE

Age groups (years)	*Total observation*	*Immunized under 2 years of age*	
		Number	*%*
1 - 4	253	179	70·75
5 - 9	1,781	1,074	60·30
10 - 14	1,606	695	43·27
15 - 19	561	140	24·96

emerges that throughout the observation period there has been an increasing tendency towards earlier immunization, which closely resembles that observed in Johannesburg.[2,4] A comparison of Figs. 1 and 2 shows that the initial

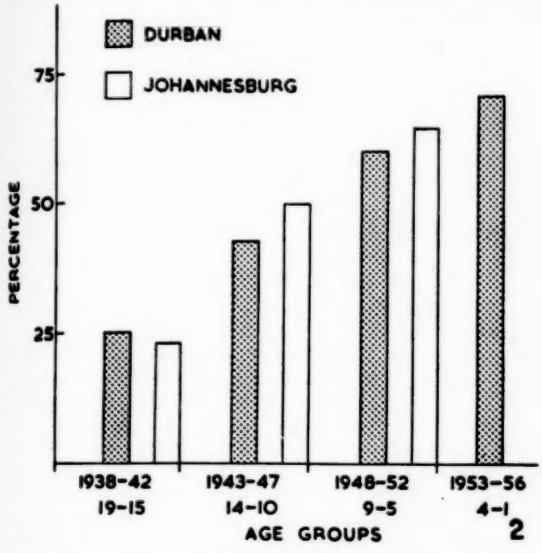

Fig. 2. Immunization in White children before 2 years of age in Durban and Johannesburg.

decline in the notification rates in the White group coincided with the immunization of approximately 50% of the children under 2 years of age. Although this should not be taken as proof of a causal relationship,[8] it is interesting to recall that similar observations have been made in previous investigations.[4]

It has been suggested that one of the reasons for the unsatisfactory immunization rates in Durban might be the influx of a considerable number of unimmunized children into the municipal area. By sorting out the questionnaires according to length of domicile in Durban, it was found that only 172 children had lived in the city for less than 1 year. A tabulation of these revealed that the age distribution corresponded closely to that of the total material, and that 58·50% had received a primary course, given in most cases before their arrival in Durban. Their inclusion, therefore, did not distort the general picture.

In conclusion it may be stated that the prevention of diphtheria in the White population of Durban, though not satisfactory, compares favourably with Johannesburg, both with regard to the extent and time of administration of the primary course and to booster injections.[2,4]

Distribution of Work

Prophylactic injections may be given by general practitioners and at the municipal clinics. From Table V it appears that White children receive slightly more prophylactic injections from the general practitioners than from the municipal authorities. The higher percentage given by general practitioners to those in the youngest age

TABLE V. IMMUNIZATION IN WHITE PERSONS BY GENERAL PRACTITIONER OR MUNICIPAL CLINIC

Age groups (years)	Immunized by general practitioner		Immunized at municipal clinic	
	Number	%	Number	%
1 - 4 ..	123	69·10	55	30·90
5 - 9 ..	791	55·01	647	45·99
10 - 14 ..	636	51·33	603	48·67
15 - 19 ..	213	56·95	161	43·05
Total ..	1,763	54·60	1,466	45·40

group is hardly a sign of a new attitude towards immunization, but probably indicates that the general practitioner does the bulk of early prophylactic immunization and the municipal clinics most of the later. This could be the result of several factors. Firstly, the general practitioner has easier access to the child in its preschool years. Secondly, mothers, actively interested in the protection of their children, are often more inclined to use a private doctor. Thirdly, the gathering of children at school furnishes the municipal authorities with an excellent opportunity for mass immunization.

DISCUSSION

The findings presented have posed 2 major, though closely related, problems. In the first place, what is the cause of the increase in observed case mortality in recent years, and why does diphtheria appear to be more malignant in certain races? Secondly, how accurately do the notification rates reflect the incidence, and can an approximate estimate of the occurrence in the population be ascertained?

With regard to the first problem, a rising case mortality may be the result of one or more of the following factors: (1) enhanced pathogenicity of the infecting strains; (2) delayed treatment; (3) lower resistance of the patient; and (4) under-notification of the disease.

Corynebacterium diphtheriae

Notwithstanding the possibility of variations in pathogenicity of the same type, it is generally accepted that gravis types are more malignant than mitis types.[9,10] Although we have no records of the diphtheria types occurring in Durban, we have no reason to suspect that the gravis type is prevalent. In support of this, the still moderate case mortality among the White population, and the fact that the alteration in case mortality has been gradual, may be mentioned — observations compatible with predominant mitis infections.[9,10] Furthermore, periodical surveys into the types found in other parts of the country[11-13] have shown that about 90% of the recovered strains are of the mitis type and 4% of the gravis type, a distribution that was essentially the same in 1942[11] and 1956.[13] Lastly, the case mortality of diphtheria in Johannesburg,[1] where the mitis strain is prevalent, is of the same order as in Durban.

To explain the differences in racial case mortality, it would be irrational to assume that the races living in close geographical proximity and occupational contact would be exposed for any significant period of time to infections that differ distinctly in regard to distribution of types. Thus, it is improbable that the infecting type

of *C. diphtheriae* can explain either the apparently greater malignancy of diphtheria in the Asian and Bantu groups or the increased case mortality in recent years. It would, however, be desirable to check this hypothesis by systematic typing of recovered strains.

Late Treatment

The probability of fatal termination of diphtheria increases with delay in treatment.[14] In a predominantly mitis-infected group of White patients, a maximum case mortality of about 10% is reached on the 4th - 5th day of illness.[14] It is possible that a delay in treatment may have contributed both to the higher case mortality in the Asian and Bantu groups and to the general rise in recent years. The delay may be the result of a reluctance to seek medical assistance and/or a misinterpretation of early symptoms. Reluctance to seek medical aid is probably of greater significance in the non-White races[18] but, as a single factor, it is incapable of explaining case mortalities as high as 20%. In regard to misinterpretation of symptoms, it is commonly observed that, as a disease becomes less frequent, it presents greater diagnostic difficulties, particularly in its early stages. This may result in some delay in treatment which, in turn, will increase the case mortality. It is difficult to assess the contribution of this factor, but, while it is probably safe to assume that it is comparatively small and independent of race, it may well be that it will become an increasing factor as less and less clinical diphtheria is seen by students and practitioners.

Lower Resistance

To explain a high case mortality in terms of low resistance will require the consideration of agents of non-specific nature since diphtheria rarely terminates fatally in individuals with a demonstrable, though low, level of circulating antitoxin.[14,16,17] Such agents must interfere comparatively little with the susceptibility to diphtheria while they enhance the severity of already established infections. They may be sought either in environment or in racial characteristics. Under the former heading we may consider climate, malnutrition, avitaminosis, debility, predisposing diseases, etc. However, it is difficult to discover where such a deterioration could have occurred in recent years that would have caused an increased case mortality, particularly in the White population. Although none of the factors mentioned seems to fulfil the criteria for acceptance, the proposition cannot be entirely dismissed. Thus, it would be of interest to follow the case prognosis in the malnourished patients who are predominantly of Bantu origin.

Since it seems equally difficult to ascribe differences in racial case mortality to dissimilarities in environment, it is reasonable to consider the possibility of racial differences in the ability to overcome the already established infection, i.e. a lower resistance in the Bantu. But such a view would clash with Murray's assumption,[18] that the Bantu have a racial resistance to diphtheria. He suggested that this racial immunity is based on a greater ability of the Bantu to form antitoxin, which may be genetically or environmentally determined. From this theory it follows that the Bantu should be in a better position to overcome the infection and consequently have a better case prognosis than White patients — the reverse of what we actually found. It is quite possible that neither view is correct, that is to say, the Bantu are not particularly susceptible to the established infection, but the other factors must be responsible for the high case mortality. Nor are the Bantu particularly resistant; a view that was based on the controversial assumption that notification rates are accurate measures of incidence.

The same arguments apply to the Asian group; considering their high case mortality it would appear that they had a low resistance to diphtheria, but an inquiry into the antitoxin levels among unimmunized Asian children in Natal revealed that an unexpectedly high proportion possessed protective quantities of antibodies.[19]

Notifications

The calculated case mortality depends on the accuracy of notifications. As a rule, the more severe the disease the greater the need for medical attention and the easier the diagnosis. This implies that the reliability of notifications augments with increasing gravity and it may reasonably be assumed that in a community like Durban very few deaths from diphtheria will remain unreported. It also follows that the milder the disease the easier it escapes notification. To this may be added that as the rôle of a disease decreases so does the awareness of its existence, thus leading to an undernotification of milder cases with an inverse effect on the observed case mortality. Considering the notification rates in the White population in Durban, it is apparent that they have fallen considerably during the observation period and may have caused a disproportionate reduction in the reporting of cases. This is probably the most important single factor in the explanation of the increased case mortality in the White, Bantu and Asian groups, while the Coloured group is so small that no inference should be drawn from the figures concerning its members.

The persistently higher case mortality which has been observed in certain ethnic groups, for example, in the Bantu, may be related partly to the inadequate medical facilities offered them and partly to their reluctance to seek medical attention at an early stage of the disease. In this connection we are concerned about the possible retarding effect which the introduction in certain areas of a clinic fee may have on the treatment of diphtheria. The possibility exists that a higher proportion of patients may die and that milder, but still detectable, cases may add to the number of foci from which the infection may spread to other sections of the community.

Estimation of the Incidence

This problem is related to the reliability of the population figures and the accuracy of notifications. The basic population figures were estimated by periodical census, which were considered reliable for the White, but somewhat defective for the non-White population. On these figures the population groups were estimated in the years between the census. Admittedly this assessment carries a certain error, which probably does not exceed 10% and is thus of minor importance in the calculation of rates.

Inaccuracies in notifications may be the result of either

erroneous reporting or the existence of unobserved cases. According to McComb[20] it is likely that failure to notify far outweighs erroneous reporting and thus results in an under-estimation of incidence. This agrees with our argument above. The figures given do not permit an accurate assessment of the incidence rate, the order of which may be estimated from a study of case-mortality rates.

In Northern Europe, between 1930 and 1935, the case mortality from mitis infections was 2 - 3%,[9] which was identical to the findings in Copenhagen a few years later.[10] In untreated cases of mitis infections in White patients in South Africa, we have observed a maximum case mortality of 10%.[14] Thus, assuming that practically all diphtheria infections in the White population of Durban were caused by the mitis type and that the delay in treatment had remained unchanged, we would expect a case mortality of about 3%. In the non-White population, the assumed delay in treatment will tend to increase the case mortality, but not to figures exceeding 10%, provided the infection is of the mitis type.[10] Since it is generally agreed that a proportion of non-White patients are treated timeously, it would probably be fair to assume that the case mortality would be about 6%. This is twice the rate in White patients and allows for a considerable, but not excessive, delay in treatment. On this basis we have attempted to calculate the incidence per 100,000 population per year in specified periods (Table VI). Under these circumstances, it appears that diphtheria is particularly

TABLE VI. ESTIMATION OF INCIDENCE PER 100,000 POPULATION PER YEAR, BASED ON ASSESSED CASE-MORTALITY RATES

	Period	*White*	*Asian*	*Coloured*	*Bantu*
Assessed case-mortality rate	1940 - 58	3%	6%	6%	6%
Estimated incidence	1940 - 44	169·32	24·84	125·03	143·53
	1945 - 49	100·32	79·68	191·54	163·70
	1950 - 54	50·00	104·35	230·88	237·04
	1955 - 58	70·99	103·52	66·18	134·86

prevalent in the Bantu and Asian groups and that it is far more common than the notification rates show (Table II). Contrary to observations, the main focus seems not to be in the Coloured but in the Bantu, among whom only 1 out of 3 cases is reported. If this reasoning is correct, it would be rewarding to encourage the population, particularly the non-White groups, to have children with sore throats and allied disorders medically examined. A systematic clinical and bacteriological investigation should detect a diphtheritic aetiology in many cases that otherwise would have been missed.

Prophylactic Immunization

In planning an immunization campaign, it is essential to realize the importance of immunizing a very high proportion of young susceptible individuals, preferably when the children are about 4 - 6 months old.[1,4] In other countries it has been possible to immunize 90 - 100% of the children,[9,21,22] but spectacular results have also been achieved in South Africa. In Johannesburg, for example, all children born since 1950 in the richer districts were immunized before the age of 2 years.[2] This reflects the parents' positive attitude to preventive measures, together with effective administration of the prophylactic. Immunization rates in other income groups were of a lower order[2] and, in some cases, could not be expected to have much influence on the morbidity.[1,4]

In Durban, in recent years, the tendency among White persons has been to immunize a higher proportion of their children before the age of 2 years, but the pace of progress has slowed down considerably (Table IV). With the birth of approximately 3,200 White children per year,[2] and a 70% immunization rate of children at the age of 2 years, 960 will reach this age annually without having been protected against diphtheria. This cannot be ascribed to lack of immunizing facilities but rather to the irresponsibility of the parents. Consequently, the campaign should be intensified, but in doing so it should be remembered that the need for immunization in the poorer White classes is likely to surpass substantially the average deficit of 30%[2,4] and that the propaganda should reach families with infants.[1,4,14] Should the response be unsatisfactory, it might be relevant to consider the introduction of a card system, as suggested in a previous communication.[2]

Unfortunately we are ignorant of the immunization rates among the non-White groups. But from the observed morbidity and mortality figures (Table II), as well as from the estimated incidence (Table VI), it is clear that they are in urgent need of protection against diphtheria. In agreement with the findings in Johannesburg,[2] it must be expected that their immunization rates are lower than in the White group and that the bulk of the work will fall on the municipal health authorities. The propaganda among the non-White population must be adjusted to their educational level and their background of customs, folk-lore and idiom. Although loudspeaker talks, group talks and leaflets have been extensively used, it is felt that some striking form of visual aid must be used to achieve effective propaganda. A card system[2] would probably not be of great value because of the low educational standard of most members of the group. If the campaign succeeded, it would be of the greatest administrative value to immunize according to a system based on regular availability of service and the age of the child. Under such circumstances it would be possible to dispense with individual immunization records and thus minimize bookkeeping, avoid several interpreters and increase the efficiency of the team. In this way the cost of immunization could be kept low without interfering with the effectiveness of the work.

SUMMARY

From the notification rates observed, it appears that a focus of diphtheria has existed in Durban, compared with the Union in general. Since 1944 the rates have diminished gradually so that, in 1958, the overall notification rate was similar to that of the Union and comparable, race to race. The findings have been discussed and in view of the rise in observed case mortality, which was excessive in certain groups, the conclusion was reached that the incidence of diphtheria has fallen less sharply than indicated by the notification rates. In fact, it is likely that, in the Bantu, only 1 out of 3 cases has been reported. This conclusion is based on the assumption that mitis infections

predominate and that racial and environmental factors are of no importance in the case prognosis. It is recommended that strains of *C. diphtheriae* should be typed and the course of the disease in malnourished patients studied. If diphtheria is as prevalent as suggested by the present study, it would be profitable to extend the clinical and bacteriological investigations of conditions which may be the less obvious manifestations of the disease.

An examination of immunization rates in the White population showed that there has been an increasing tendency towards early administration of the prophylactic. In 1955 - 1958 about 70% of the children were immunized at the age of 2 years. The failure to protect the remaining 30% seems to be due to indifference of parents; various suggestions have been outlined in this connection.

The need for immunization among the non-White population is believed to be even greater. In these groups, continuous immunization presents special difficulties, partly because of their lower educational level and partly because most of the work will fall on the municipal health authorities. However, if the cooperation of the people can be ensured it is possible to devise rational and fairly inexpensive methods for the immunization.

We thank the staff of the Municipal Department of Health, Durban, for their assistance in distributing and collecting the questionnaires; and Dr. J. H. S. Gear, Director of the South African Institute for Medical Research, for permission to publish this paper.

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TRANSVAAL SOCIETY OF PATHOLOGISTS

SUMMARIES OF SCIENTIFIC PAPERS*

1. THE HUMAN ECCRINE AMPULLA

DR. L. J. A. LOEWENTHAL, *Johannesburg*

Serial sections from human skin stained with PAS show a structure, about 50 micra in length, between the secretory and ductal portions of the sweat coil. This structure stands out clearly with this staining method and shows an abrupt change from the predominantly red secretory cells to a single row of cubical cells, with large nuclei which show an avidity for basic stains. There is a layer of myo-epithelium continuous with that of the secretory portion and at the distal end this changes to a circular arrangement, presumably a sphincter. In certain sections canaliculi can be shown to open in the lumen and staining with PAH shows that these are situated in the inter-cellular cement substance. Histochemical methods carried out so far show alkaline-phosphatase activity of the free surface (that part which becomes cuticle further on in the duct). Acid phosphatase activity stops abruptly at the beginning of the ampulla and is present in the early portion of the duct beyond the ampulla. RNA is present, beginning abruptly at the end of the secretory portion and continuing along the duct.

The structure probably has two functions: (1) to regulate the flow of sweat by means of its sphincter, and (2) the resorption of sweat constituents by means of the canaliculi. An analogy to the renal tubules is suggested.

2. THE ISOLATION AND HOST RANGE OF A SERIES OF LACTOBACILLUS PHAGES

DR. H. C. DE KLERK, *Institute for Pathology, Pretoria*

The isolation of a series of 14 bacteriophages active on lactobacilli is described. The host range of the phages as determined by both lytic and abortive infection is discussed.

* Read at a meeting of the society held in Johannesburg on 15 October 1960.

3. THE NATURE AND SIGNIFICANCE OF ALCOHOLIC HYALINE

PROF. B. J. P. BECKER, *University of the Witwatersrand, Johannesburg*

Hyaline ramifying masses within the cytoplasm of liver cells were first described by T. B. Mallory in 1911 and labelled 'alcoholic' hyaline. Although Mallory's hyaline occurs in a wide variety of liver diseases and is pathognomonic of none, it is present in virtually 100% of livers showing fatty cirrhosis where there is a history of chronic alcoholism. Its presence signifies severe, probably irreversible, cell damage.

Histochemical examination shows that the material consists of a solvent-resistant, choline-containing phospholipid bound to a basic protein of histone type. The material does not contain any carbohydrate or nucleic acid. Calcium and phosphates occur occasionally.

The histone content represents degraded RNA, and the choline-containing phospholipid is probably derived from mitochondria or microsomes. Mallory's hyaline therefore represents degraded, disorganized, labile liver cytoplasm in which most of the enzymatic activity of the liver cell is concentrated. Its presence indicates virtually complete enzymatic paralysis.

The aetiology and pathogenesis remain obscure. The material can be experimentally produced by a low-protein, high-cholesterol diet without consumption of alcohol. It can also be produced in most cases of alcoholic fatty cirrhosis where dietetic influences are believed to be important. Thus, it is possible that Mallory's hyaline represents a type of nutritional hepatic injury.

In liver disease in Bantu patients the material is scanty, even in the rare cases of fatty cirrhosis of Bantu adults.

4. ACETYLCHOLINESTERASE AND THE LIFE SPAN OF THE ERYTHROCYTE

DRS. N. J. VAN RENSBURG, K. STEVENS and J. METZ, *South African Institute for Medical Research, Johannesburg*

The function of the relatively large amount of the enzyme acetylcholinesterase which occurs in the red cell is unknown.

A deficiency in the enzyme has been found in the haemolytic anaemia, paroxysmal nocturnal haemoglobinuria, and also in aging red cells.

This paper describes attempts to determine whether normal levels of acetylcholinesterase are necessary for the normal survival of red cells. In the first experiment red cells of haematologically normal subjects were labelled with radioactive chromium and re-injected. Octamethylpyrophosphoramide (OMPA) was then administered to the subjects, and caused inhibition of the red-cell acetylcholinesterase activity to levels comparable with those found in paroxysmal nocturnal haemoglobinuria. In the three subjects studied no deviation from the normal red-cell survival curve was noted.

In these cases the effect of inhibiting the acetylcholinesterase activity in already-formed, circulating cells was studied. To observe the effect on red cells in the process of being formed, OMPA was first administered and the cells then labelled. In one of the two subjects in this study there was an initial rapid fall in the survival curve—a finding, however, not uncommonly seen in normal subjects. To elucidate this observation further, OMPA was administered to another subject, and after a few days radioactive iron was injected while the OMPA was continued. This ensured that only those red cells on which OMPA was acting during their formation were being labelled. No deviation from a normal red-cell survival curve was observed.

It is concluded that normal levels of acetylcholinesterase are not necessary for normal red cell life-span.

5. 'N VERGELYKENDE STUDIE VAN SEREBROVASKULÊRE INSIDENTE IN BANTOES EN BLANKES

DR. J. H. ENSLIN, *Instituut vir Patologie, Pretoria*

'n Reeks van 876 opeenvolgende outopsieverslae oor 607 Bantoe gevalle en 269 Blanke gevalle is nagegaan om die insidensie van serebrale bloeding en infarksie in die twee rassegroepe te vergelyk. Die Bantoegroep toon 12 gevalle van serebrale bloeding en 15 gevalle van infarksie. In die Blanke reeks is daar 6 serebrale bloedings en 22 infarkte. Daarbenewens toon 3 gevalle in elk van die rassegroepe bloeding sowel as trombose.

Die Blanke groepe en die Bantoe-groep met trombose toon 'n hoër persentasie-insidensie van serebrovaskulêre aterosklerose as die Bantoe bloedingsgroep. Die persentasie-insidensie van hipertensie in die Bantoe en blanke serebrale bloedingsreekse is hoër as in die ooreenstemmende infarksiereekse.

Die ondersoek staaf Laurie en Woods se bewering dat serebrovaskulêre insidente by die Bantoe algemeen voorkom. Dit is egter nie 'n aanduiding van die voorkoms van aterosklerose by die Bantoe nie. Gevorderde serebrovaskulêre aterosklerose is teenwoordig in slegs 33% van gevalle van serebrale bloeding.

Die skaarste van miokardiale infarksie in die Bantoe word weer eens beklemtoon en die voorstel word gemaak dat lokale vaskulêre faktore verantwoordelik mag wees vir die relatiewe hoë voorkoms van serebrovaskulêre insidente in hierdie rassegroep.

6. A MODIFIED UREASE TEST SUITABLE FOR CHARACTERIZATION OF STRAINS OF BRUCELLA ORGANISMS

PROF. G. C. VAN DRIMMELIN, *Veterinary Research Laboratories, Onderstepoort*

Typing of Brucella organisms by means of urease tests by the methods of van Slyke *et al.*, Conway, Schneider *et al.*, Christensen, Bauer, and Pacheco *et al.*, has not generally been found sufficiently reliable. The effect of pH concentration was therefore investigated. Employing soybean urease, it was determined that the pH threshold value is depressed by higher urease concentrations. The reaction is sensitive over a wide range, resulting in a shift of approximately pH 1·0 for each doubling of urease content.

Accordingly, a safe and reliable quantitative tube test was evolved for Brucella strains which, as demonstrated with the aid of colour slides, was able to be duplicated and was fully complementary to overseas data.

Placing of South African types of Brucella organisms on the scale for urease activity, shows the interesting diversity of local strains which obviously represent forms intermediate between the classical WHO reference strains.

The possible existence of iso-enzymes with different pH limits is mentioned with special reference to the suggestion that *Br. suis* may possess iso-urease which differs from *Br. melitensis* urease.

7. SOME OBSERVATIONS ON CONGENITAL GOITRE IN BOVINES

PROF. K. SCHULZ, *Veterinary Research Laboratories, Onderstepoort*

8. GLUTATHIONE ASSAY AND METABOLISM IN NORMAL AND DRUG-SENSITIVE RED CELLS

DR. R. E. BERNSTEIN, *Metabolic Research Unit, South African Institute for Medical Research, Johannesburg*

In recent years, an intrinsic metabolic defect of red cells, which is responsible for an acute self-limiting haemolysis of the older-age population of circulating erythrocytes on exposure to certain drugs, has been described. The defect, a genetic sex-linked susceptibility to drugs with considerable variation in racial incidence, is characterized by a low reduced-glutathione content and a deficiency of glucose-6-phosphate dehydrogenase. A major fraction of the red-cell reduced glutathione is vulnerable to destruction by drugs *in vivo* and *in vitro*, yielding a sensitive stability test on incubation with phenylhydrazines.

While sensitive subjects are most susceptible to haemolysis on treatment with the aminoquinoline antimalarials, numerous drugs have been implicated, e.g. sulphones, nitrofurantoin, sulphanilamide, phenacetin, aspirin, naphthalene, and an active unknown principle from the *Vicia faba* bean (the cause of favism).

This erythrocytic deficiency was found in about 10% of American Negroes. On the other hand, Caucasians, South American Indians, Chinese, etc., have a very low incidence, while Mediterranean and Middle East races have a 10-30% incidence. Judged by the *in vitro* glutathione stability test, an incidence of 2·5% was present in 600 Bantu specimens examined. The sensitive red cells showed a significantly lower reduced-glutathione level, an increased Heinz-body formation on incubation with phenylhydrazine, and an activity of glucose-6-phosphate dehydrogenase $^1/_5$-$^1/_{10}$ that of normal red cells. Smaller numbers of other South African racial groups have been investigated.

While the glucose-6-phosphate dehydrogenase deficiency may be the primary genetically-controlled defect, it is possible that reduced gluthathione, its co-factor, may play a critical part in its metabolic action. This is postulated because the rate of synthesis of reduced glutathione from its constituent amino acids *in vitro* in the sensitive red cells was $\frac{1}{4}$ that for normal erythrocytes.

9. SOME ASPECTS OF REGENERATION IN CIRRHOSIS OF THE LIVER

DR. I. W. SIMSON, *Institute for Pathology, Pretoria*

The mitotic indices were investigated in two groups of cirrhosis of the liver—fatty septal and postnecrotic cirrhosis. In both groups the indices were low. It is therefore suggested that the nodules in these two groups of cirrhosis could not be regarded as actively regenerating.

On the basis of these findings and on the available evidence in the literature, a scheme is proposed, depicting the variations in mitotic activity during the pathogenesis of the lesion in each group.

From the Secretary's Desk

The Extraordinary General Meeting

On 8 March an Extraordinary General Meeting was held in Bloemfontein, requisitioned by over 100 members of the Natal Coastal Branch. There were less than 50 members present, but between them they carried more than 1,200 proxies.

The meeting was called to express the desire that the Medical Services Plan should be extended to other parts of the Union in addition to the Reef area and Johannesburg where it is reported to be meeting with success. Most of the Branches were represented, but I recollect seeing only one member of the Southern Transvaal Branch at the meeting. It is a pity that some of the members who are conversant with the working of the Plan could not have been present to inform the meeting of its progress, since great interest has been shown in it in many of the Branches which have invited the General Manager to attend meetings of members.

At the meeting it was pointed out that the Association had no jurisdiction over the management of the Plan, and any extension of it would depend on the Directors who would no doubt cause it to be extended when it was reasonable to do so. When that time comes it is likely to be widely welcomed. An amendment proposed by Dr. R. Theron and seconded by Dr. J. H. Struthers, reading: 'That in view of the fact that Federal Council has twice intimated to the Directors of the Medical Services Plan that extension of the Plan to other centres in the Union would be welcomed, this Extraordinary General Meeting of members of the Medical Association of South Africa is content to leave the decision regarding extension of the Plan to the Directors to implement when they see fit', was put to the vote and was carried by 979 votes to 331.

The Minutes of the meeting appeared in the *Journal* of 25 March, 1961.

South African Mutual Medical Aid Society

There still appears to be some doubt in the minds of members regarding this Society. The position briefly is this: The Association broke off negotiations with the Society mainly because the Society insisted that it would pay doctors direct and according to the Tariff of Fees for Aproved Medical Aid Societies by cheques 'in full settlement' for its new scheme, put out some six months ago,which is of such a nature that the Association could not recognize it. Its earlier scheme was satisfactory and many groups in it were recognized as members will recall. It was this obstinate persistence of a lay organization wishing to decide what a doctor's fees should be for its members of an unapproved scheme that made further negotiations impossible and, indeed, caused negotiations to be broken off.

To save our members embarrassment we had suggested that they should inform the Society that they did not wish to receive any cheques direct, but that they would look to their patients for payment. In some cases the Society has continued to send cheques, and, if they are for the full amount of the account, they may be accepted 'in full settlement', but if they are for a lesser amount they should be returned. The tendering of a cheque for the total amount of the account is reasonable, and to refuse such a cheque is to jeopardize a doctor's legal right to collect his fee at a later date from his patient by court action. In this case the Society is acting as the patient's agent in settling his bill in full. It is entirely another matter if the Society tenders a cheque for a sum less than the amount of the account and expects it to be accepted 'in full settlement'. Similarly, a cheque tendered by the Society in part payment of an account, may be accepted on the clear understanding that any balance may be collected from the patient. Altering the conditions under which a coded cheque is issued before accepting it does not cancel the conditions; thus a coded cheque tendered 'in full settlement' should only be accepted if it is for the total amount of the account and is truly 'in full settlement'.

The Ceiling of £2,300 (R4,600)

The fixing of a ceiling income of £2,300 (R4,600.00) for insurance medical aid society patients has led to criticism in some Branches, and generally it has been considered to be too high. This would undoubtedly be so if the number of insured persons belonging to medical aid schemes earning between £1,700 and £2,300 (R3,400.00 and R4,600.00) was high. The sum of £1,100 (R2,200.00) is accepted as the average income for approved medical aid societies (employer-sponsored) and there is no shadow of doubt that the persons in the insured schemes earning less than £700 (R1,400.00) *per annum* far outnumbered those at the other end of the scale, i.e. £1,700 to £2,300 (R3,400.00 to R4,600.00). It would thus seem that the average of £1,100 (R2,200.00) is being maintained and is probably even lower in the insured schemes.

Commonwealth Medical Association

At the Commonwealth Medical Conference which met in Auckland on 1 - 4 February, the most important discussions which took place were in regard to the future. The first of these Conferences was held in Saskatoon, Canada, in 1949, and since then they have met in Brisbane (1950), Calcutta (1952), Toronto (1955), London (1959) and now in Auckland. It has been felt that although the discussions have been of value, the tie should be closer and that a 'Commonwealth Medical Association' should be formed. It was agreed that there was no need for an 'Association' in the generally accepted sense of the word, but that there should be some form of organization that could keep the various parts of the Commonwealth in touch with one another, and that a member of a national Medical Association travelling in any Commonwealth country should be received as a fellow member of the Commonwealth Medical Association and made to feel at home. There is information of value that can be disseminated and old links to be stabilized.

As doctors, it is right that we should remember that there are no frontiers in medicine and that a fundamental principle of our practice of medicine is that we recognize no barriers of colour, race, creed or sex. These are written into our tenets and if we are to be true to our calling we must never let them go. For this reason it would be right to assume that, whatever may have happened elsewhere, we shall be able to take our place as a founder member of the Commonwealth Medical Association as, no doubt, will Eire which has been invited to all past Commonwealth Medical Conferences and has been represented on many occasions.

Medical House
Cape Town
23 March, 1961

VERSLAG VAN DIE NAGRAADSE SKOOL-BEPLANNINGSKOMITEE

J. W. VAN DER RIET, *Ere-sekretaris, Bloemfontein*

Hierdie verslag handel oor die tydperk wat verloop het van 9 September 1959 af, toe die vorige rapport voorgelê is, tot aan die einde van Desember 1960.

Algemene Beplanning

Die werksaamhede van die komitee onder die voorsitterskap van Dr. J. D. Meyer gedurende die tydperk in oorsig, is met ywer voortgesit. Die gekose komitee het bestaan uit drs. W. Grundill, A. Morrison, F. P. Scott, Koos Theron, R. Theron, en J. W. van der Riet (ere-sekretaris). Dr. J. W. Wessels dien *ex officio* in die komitee en dr. v W. Eybers is gekoöpteer tydens besprekings oor biblioteeksake. Die komitee het twee keer vergader.

Die Uitvoerende Komitee van die Provinsiale Raad van die O.V.S. het amptelike status aan die komitee verleen, en besondere vordering is gemaak met die beplanning en verkryging van nuwe en beter fasiliteite aan die Nasionale Hospitaal.

Die belangrikste afsonderlike vordering is die aankoms van die histopatoloog by die plaaslike tak van die S.A.I.M.N. Hierdie komitee is dankbaar teenoor al die instansies wat meegehelp het om hierdie ideaal te verwesenlik, en wil langs hierdie weg weer eens dr. Brüning hier verwelkom.

Die Provinsiale Administrasie het reeds planne goedgekeur, en die nodige fondse gestem, vir 'n patologiese laboratorium en 'n lykskouingsaal. Dieselfde gebou sal ook 'n laboratorium huisves waaarin al die fasiliteite vir anatomiese disseksie aangebring sal word.

Met die goedgunstige samewerking van dr. J. W. Wessels, Geneesheer-Direkteur van die Nasionale Hospitaal, het die komitee meer meubels in die teekamer, wat dien as die vergadersaal, verkry. Hierdie vertrek word egter te klein vir die bedrywighede, en dit is dus verblydend dat die administrasie reeds die planne vir 'n moderne lesingsaal met wagkamer-fasiliteite, vir pasiënte wat tydens kliniese vergaderings demonstreer word, aanvaar het. Die koste is met die laaste begroting goedgekeur, en met die werk word eersdaags begin.

Die Direkteur van Hospitaaldienste is angstig om die beskikbare fasiliteite tot die grootste voordeel te organiseer, en het beloof om die registrateursposte in die verskeie afdelings van die Nasionale Hospitaal, in die toekoms, vir spesifieke afdelings te adverteer en die aanstellings ooreenkomstig te maak. Administratiewe moeilikhede het dit tot dusver verhoed.

Gedurende die afgelope jaar het die komitee, in medewerking met die Sentrale Afdeling van die Mediese Vereniging, etlike voor-aanstaande besoekers van die buiteland en van ander sentrums in Suid-Afrika ontvang. Bloemfontein neem dus nou in hierdie opsig sy regmatige plek in, saam met die ander groot mediese sentrums.

'n Afvaardiging van die Kollege van Interniste, Chirurge en Ginekoloë van Suid-Afrika het die moontlikhede en mediese fasiliteite wat Bloemfontein bied, kom ondersoek. Die plaaslike Universiteit het ook alle hulp aangebied en weer eens hulle bereidwilligheid om saam te werk, getoon.

Opknappingskursusse en Kliniese Vergaderings

Gedurende die tydperk waaroor die verslag handel, is twee opknappingskursusse gereël. By die tweede geleentheid het beide prof. A. J. Brink, van Stellenbosch, en prof. Frans Geldenhuys, van Pretoria, opgetree. Hulle bydraes was beslis verantwoordelik vir die rekord inskrywings.

Die komitee beplan 'n opknappingskursus gedurende April 1961 wat op Bethlehem gehou sal word.

Die instelling van die twee-weeklikse kliniese besprekings is 'n groot sukses, grotendeels te danke aan die ywer wat dr. F. P. Scott aan die dag lê. Goeie voordragte word gelewer en lok meer en meer bespreking uit. Die bywoning groei steeds. Een aspek van die kliniese aanbiedinge wat nie goed gevorder het nie en wat voorlopig gestaak is, is die vroeë Sondagmôre-saalrondtes.

Navorsing

Dr. Pohl rapporteer dat die navorsing in verband met narkosedood nog goed vorder en dat hy nog gereeld die nodige inligting aan professor Kok besorg. Dr. Pohl vra egter dat kollegas meer stiptelik gegewens oor narkose-sterfgevalle moet verstrek.

Drs. Scott, Venter, en Neser neem deel aan die landswye navorsing van die foto-biologiese eenheid onder die beskerming van die W.N.N.R.

Publikasies

Dr. Scott is die enigste kollega wat gedurende die jaar (onder die beskerming van hierdie komitee) artikels in die mediese pers geplaas het.

Biblioteek

Professor Groenewoud, Rektor van die Universiteit O.V.S., het onderneem om al die boeke wat deur die Mediese Vereniging aan die Universiteit geskenk is, te laat orden, bind, en versorg. Baie van die Bloemfonteinse kollegas het reeds hulle tydskrifte en boeke geskenk. Verdere bydraes en geldelike skenkings is belowe. Vir die geldelike bydraes is 'n spaarrekening by die Nasionale Bougenootskap geopen met 'n bedrag van R39.50. Die eerste bydraes op hierdie rekening is deur professors Brink en Geldenhuys gemaak.

Finansies

Die batige saldo by die United Bougenootskap is R60.16.

Die komitee het gedurende die jaar 'n 16-mm. projektor met klank aangekoop en Pfizer Laboratories het 'n 35-mm. skyfieprojektor aan die komitee geskenk.

Abbott Laboratories het die komitee R200.00. geskenk vir die aankoop van perspeks vir die montering van patologiese monsters. Dr. L. Muller het onderneem om die monteerwerk vir die komitee te behartig.

J. W. van der Riet
Ere-sekretaris

OFFICIAL ANNOUNCEMENT : AMPTELIKE AANKONDIGING

WORKMEN'S COMPENSATION ACT (NO. 30 OF 1941)

All registered medical practitioners should by now have received a copy of the Fifth edition of the *Medical Handbook* issued by the Workmen's Compensation Commissioner for the guidance of medical practitioners. In this new edition the fees, payable by the Commissioner for medical services rendered to injured workmen, have been converted to the decimal system.

Members who have not yet received their copies are advised to write to the Workmen's Compensation Commissioner, P.O. Box 955, Pretoria.

P. D. COMBRINK
Assistant Secretary

28 Plaza Building
Bank Lane
Pretoria
24 March 1961

ONGEVALLEWET (NO. 30 VAN 1941)

Alle geregistreerde mediese praktisyns moes teen hierdie tyd 'n eksemplaar ontvang het van die Vyfde uitgawe van die *Mediese Handboek* wat uitgegee word deur die Ongevallekommissaris vir die leiding van mediese praktisyns. In hierdie nuwe uitgawe is die gelde, wat betaalbaar is deur die Kommissaris vir mediese dienste gelewer aan beseerde werkers, omgereken in terme van die desimale stelsel.

Lede wat nog nie hul eksemplare ontvang het nie, word aangeraai om te skryf aan die Ongevallekommissaris, Posbus 955, Pretoria.

P. D. COMBRINK
Assistent-Sekretaris

Plaza-gebou 28
Banksteeg
Pretoria
24 Maart 1961

IN MEMORIAM

FRANCIS JOHN ALLAN, M.B., B.CH. (IREL.)

Dr. A. J. Orenstein, of Johannesburg, writes:

Dr. Francis John Allen, O.B.E., died in his sleep on the night of 21 February 1961 in his home at Witbank, at the age of 84 years.

As I sat in the small crematorium chapel in Pretoria, together with his widow, son, his life-long friend and colleague Dr. H. J. Schultz, a handful of his friends and two old African servants, I thought of the man I have known as colleague and friend for over forty years. I remembered when I first met him after his return from World War I wearing the ribbons of M.C. and O.B.E. They did not just throw Military Crosses at medical officers for working in a base hospital! He would not speak of his war service, so I don't know to this day just what earned him the award for exceptional bravery.

He continued to work as a mine medical officer until he was 78 years old, when his gradually increasing deafness became virtually total.

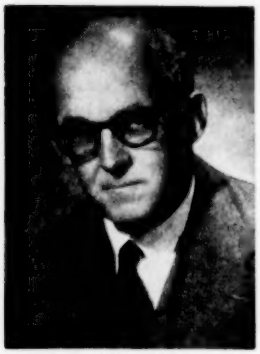
It has been my good fortune to have known many fine men and many devoted doctors—Allen is in the very front rank of these. He was one of the last of the almost vanished small group of best type of general practitioner, able to tackle most competently any problem confronting him, be it medical, surgical or obstretical. Difficulties merely posed a challenge. For instance, the old cottage hospital in Witbank had no operating theatre of any kind, and there was no money for one. Well, Allen just built one with his own hands.

I heard the Minister say: 'Goodness does not die, it lives forever'. If by 'goodness' is meant undeviating honesty, doing the best one can at all times and in all circumstances and 'walking humbly before the Lord', then the 'goodness' that was Allen will be an everlasting memory, for he

> '. . . loved no darkness,
> Sophisticated no truth,
> Nursed no delusion,
> Allowed no fear.'

R. A. MOORE DYKE, M.R.C.S., L.R.C.P.

Dr. J. T. Russel, of Port Elizabeth, writes: Pom Dyke, who died on 25 February after a short illness, was born in Morija, Basutoland on 26 August 1901, the son of the missionary, Rev. R. H. Dyke.



Dr. Moore Dyke

His mother, Aline, was the granddaughter of Eugene Casalis, the first missionary to Basutoland, who arrived there in 1833, while Moshesh was the Paramount Chief of the Basutos.

Educated at Kingswood College, Grahamstown, he commenced his medical studies at the University of Cape Town and qualified at Guys Hospital, London, in 1926. While a student at Guys he was a registered rugby referee, being referee for the City of London Police team's first rugby match. On his return to South Africa he did various temporary jobs on the Johannesburg mines, and at Port Elizabeth, Cape Town, and Basutoland. In 1929 he returned to England and specialized as an anaesthetist, filling anaesthetic posts at Ipswich, Suffolk, and the West Hammersmith Hospital, London. Returning to South Africa again in 1930, he started as a specialist anaesthetist in Port Elizabeth where he practised continuously until his death, except for the war years when he was on army service.

His intense interest in medical, social and civil affairs is reflected in his unselfish service to the community as a whole, irrespective of race or colour. A leading Rotarian, he devoted a tremendous amount of time and energy to assisting the underprivileged.

He was appointed to the Provincial Hospital honorary staff in 1936, and served at various times on the Medical Advisory Committee and the Hospital Board. He was a member of the Cape Midlands Branch Council for a considerable time and filled, at one time or other, practically all the executive positions. During the war he served in Abyssinia, East Africa, the Western desert, and Italy. My first meeting with Major Pom Dyke was in Italy when he was Second in Command to Colonel Moss Broderick, of 108 S.A. General Hospital. He was loved and respected by all ranks, whose conditions he was always trying to improve. He was mentioned in despatches.

In 1943, while he was serving at Baragwanath General Hospital, he was mainly responsible for the formation of the South African Society of Anaesthetists. Typically, he refused the chair, but became the first secretary, doing the work without taking the kudos! He did, however, become President later on and represented the Union at the 1956/57 World Congress of Anaesthesiologists in Holland. He was to have been the President of the Anaesthetics section of the forthcoming congress and had promised R50.00 for a registrars' prize.

In his own work he was meticulous, always up-to-date, and trying to improve anaesthetic techniques. The way he handled children was a joy to watch. It was indeed a privilege to have worked with him.

In 1935, together with Dr. John Finnemore and Mr. 'Boet' Erasmus, he started the Pugs rugby side. The ability to play rugby well was not sufficient for selection for this side. Decency and good sportmanship were considered equally important and the age limit was 22. The fostering of good sportsmanship amongst the youth was the essential aim. Some of our Rugby Springboks have been members of the Pugs. He was a member of the Rugby Union and would this month have been proposed a life member—a rare honour.

Soon after the war Pom Dyke was the chief instigator of the Port Elizabeth Playing Fields Association which has done such wonderful work in obtaining sports fields and other facilities for Africans, Coloured people and Indians. He was President of the Association for many years. Their tribute to him was 'Dr. Pom Dyke and the Port Elizabeth Playing Fields Association were synonymous. The Dyke Playing Fields, among many other similar projects, will always remain a memorial to the vision and energy of a much-loved personality'.

His ashes were laid to rest in the Dyke Sports Field. We said farewell to one of the finest members of our profession. His unselfishness, unswerving loyalty, persistence in doing what was right, and his vision benefited everyone with whom he came in contact.

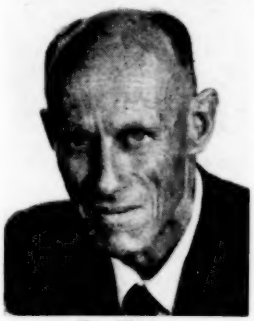
He was unmarried and is survived by five brothers and two sisters, most of whom are associated with the medical, dental or nursing professions.

He has lived a good life.

JOHN ERLING FISCHER, M.A., M.B., B.CH.

Dr. C. J. H. Brink, of Bloemfontein, writes:

It is with much regret that his many friends and colleagues will learn that the death of John Erling Fischer will now have to be presumed due to his disappearance on 13 May 1960 after leaving Inverey Hostel on a walking tour from Linn O'Dee through Glen Feshie to Kingussie in the Scottish Highlands. He was born in Cape Town in 1890, being the second son of Prof. Albrecht Fischer who came from Germany in 1882 as Professor of Chemistry at Stellenbosch, and who later became the first Secretary for Agriculture during Mr. J. X. Merriman's Cape Government. During Professor Fischer's term as Secretary for Agriculture, the Elsenburg Agricultural College was established. Erling's mother, Catherine, was a daughter of Professor John Murray of the Stellenbosch Theological Seminary. After attending school at Jacobsdal and Beaufort West, he took his B.A. degree in 1908 at the Victoria College, Stellenbosch. After teaching at Prince Albert, Vryheid, and Koffiefontein he took his M.A. degree in 1916 at the Victoria College. He then taught at Standerton until 1923 when he studied medicine at the University of the Witwatersrand, qualifying in 1929.



Dr. Fischer

After working under Professor Brebner, he became interested in bilharzia control in the Northern Transvaal and worked in close cooperation with the Transvaal Bilharzia Committee, in particular with Dr. J. Kieser and Dr. F. Z. van der Merwe. Later he worked in Mashonaland and at Mochudi in Bechuanaland. In 1935 he went back to teaching at the Government Native School in the Aminuis Reserve in South West Africa. In 1944 he was appointed Medical Inspector of Schools for South West Africa until his retirement in 1952. His high sense of duty to his fellow men obliged him to return to his former interest in teaching and he continued at Aminuis as Principal of the Native School until April 1960 when he went on long leave, only to disappear from our ken in spite of intensive searches by mountain rescue teams, by the Police Forces and others, and the offer of a substantial reward for information leading to a definite conclusion.

He was a faithful friend and loyal colleague and our deep sympathy is extended to his surviving brother and sister. He was not married. His other brother was posted missing in the first World War.

PASSING EVENTS : IN DIE VERBYGAAN

South African Paediatric Association (M.A.S.A.), Cape Town Sub-Group. A joint meeting of this Sub-Group and the Society for Clinical and Experimental Hypnosis of South Africa (Southern Section) will be held on Tuesday 11 April at 8.15 p.m. in the Lecture Theatre, Red Cross War Memorial Children's Hospital, Rondebosch. Dr. I. Mirvish will speak on 'Some aspects of the use of hypnosis in children'. All who are interested are invited to attend this meeting.

The annual general meeting of the Cape Town Sub-Group of the South African Paediatric Association will follow the lecture.

Hart-long Groep van die Universiteit van Stellenbosch. Die volgende vergadering van die Groep word gehou op Donderdag 13 April in die Groot Voorlesingsaal, Kliniese-gebou, Karl Bremer-hospitaal om 8 nm. Die program is soos volg:

1. Morfologiese probleme in verband met die parietale fibroplastiese endomiokarditis, prof. H. W. Weber.
2. Die ondersoek van diffusie stoornisse, dr. H. P. Wassermann.

Alle belangstellendes word vriendelik uitgenooi om die vergadering by te woon.

* * *

The South African Institute for Medical Research, Johannesburg, Staff Scientific Meeting. The next meeting will be held on Monday 17 April at 5.10 p.m. in the Institute Lecture Theatre. Dr. J. C. E. Kaufman will speak on 'Spread of primary brain tumours'.

* * *

University of Cape Town and Association of Surgeons of South Africa (M.A.S.A.), Joint Lectures. The next lecture in this series will be held on Wednesday 12 April at 5.30 p.m. in the E-floor Lecture Theatre, Groote Schuur Hospital, Observatory, Cape. Dr. B. R. A. Binnewald will speak on 'Fractures of the mandible'. All members of the Medical Association are welcome to attend this lecture.

* * *

Mr. Martin Singer left Cape Town on 1 April on a 3-month visit to the Continent and the United Kingdom. While in England, Mr. Singer will be attending his former hospital, the Royal National Orthopaedic Hospital.

Dr. Martin Singer van Kaapstad, het op 1 April vertrek op besoek na die Vasteland en Brittanje vir drie maande. Terwyl dr. Singer in Engeland is, sal hy sy vorige hospitaal, die Royal National Orthopaedic Hospital, besoek.

Department of Anaesthesia, University of Cape Town. On Saturday 15 April a meeting will be held at the Red Cross War Memorial Children's Hospital, Rondebosch, Cape, at 9.30 a.m. Dr. P. Smythe will speak on 'Respiratory problems of infants'. All interested doctors are invited to attend this meeting.

* * *

The Second Middle Eastern-Mediterranean Paediatric Congress will take place in Ankara from 6 - 9 September 1961. Any interested paediatricians may obtain full information from the Secretary General, Hacettepe Cocuk Hastahanesi, Ankara.

* * *

South African Chapter of the American College of Chest Physicians, D. P. Marais Prize. The Southern Branch of the South African Chapter of the American College of Chest Physicians is offering a prize of R50 to medical students and graduates of the Universities of Cape Town and Stellenbosch, for the best essay on 'The cardio-respiratory manifestations of sarcoidosis'.

Further information may be obtained from the Secretary, Dr. H. Muller, 812, Medical Centre, Cape Town.

* * *

Edenvale Hospital, Johannesburg. The next clinical meeting will be held on Wednesday 19 April at 8.15 p.m. The Secretary will report on the activities of 1960, followed by the election of the new committee. Dr. G. I. Frank will lecture on 'The laboratory physician', and clinical cases will be shown by Dr. Gus Lange. All those interested are invited to attend this meeting.

* * *

Dr. N. Rosensweig, orthopaedic surgeon, Cape Town, has resumed his practice after a recent overseas visit.

COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

POSTGRADUATE BURSARIES FOR DIRECTED RESEARCH*

1. The South African Council for Scientific and Industrial Research is offering a limited number of bursaries for directed research, either at approved overseas institutions or within its own laboratories.

2. The bursaries will be awarded for subjects in the field of the pure and applied sciences (including medicine, dentistry, pharmacy, engineering, architecture, and applied psychology), where adequate post-M.Sc. training is not available in universities in the Union of South Africa.

3. The Council will require a high standard of candidates and does not bind itself to make awards.

4. The bursaries for overseas study will be tenable from 1 October 1961, and those for work in the Council's laboratories from 1 January 1962. They will be awarded for one year at a time and may be renewed if satisfactory reports are received on the bursar's progress.

5. The maximum value of the bursaries will be—
R800.00 p.a. for work in CSIR laboratories.
R1,200.00 p.a. for work in the United Kingdom or the Continent.
R1,600.00 p.a. for work in the United States and Canada.

Application may also be made for a travel grant of not more than R440.00 for candidates wishing to proceed overseas.

6. Applicants must:

(*a*) Submit programmes of research; (*b*) if proceeding overseas, undertake to return to the Union of South Africa for at least two years after termination of their bursaries; and (*c*) make their own arrangements for entry into overseas institutions approved by the CSIR.

7. All bursaries will be subject to the Council's regulations governing research awards, and applications must be on the Council's application form R.A.1. Forms and copies of the regulations are obtainable from the Registrars of South African universities or from the Administrative Officer-in-Charge, Medical Research/Research Grants Division, CSIR, P.O. Box 395, Pretoria.

8. Applications should, where possible, be submitted through the Registrar of the University to which the applicant is attached, and should be submitted not later than 30 April 1961, in the case of overseas bursaries, and 31 August 1961, in the case of bursaries in the Council's own laboratories.

*(See Paragraph 18 of the Council's Grants Regulations)

BOOK REVIEWS : BOEKBESPREKINGS

INTRA-ARTERIAL INFUSION OF PROCAINE

Intra-arterial Infusion of Procaine in Therapeutic Practice. By N. K. Gorbadei, with a supplement 'The Treatment of Patients with Hypertension by Intra-arterial Infusion of Procaine Solution' by I. I. Velikanov. Translated from Russian. Pp. 135. Illustrated. $7.50. New York: Consultants Bureau, Inc. 1960.

After introductory chapters on intravascular infusion of procaine in therapeutic practice, the mechanism of action of procaine and the technique he used for intra-arterial infusion, the author devotes almost half of his small book to the treatment of peptic ulceration by this means. There are also chapters on such diverse subjects as the treatment of bronchial asthma, coronary insufficiency, and infectious polyarthritis by the same method; and there is a supplement by I. I. Velikanov on intra-arterial procaine in the treatment of hypertension. This is a surprising array of topics. Treatment groups are not adequately controlled and the claims made by the author would need careful and critical analysis before their use could be advocated. E.B.A.

GRAFTING

Biological Problems of Grafting. A Symposium sponsored by the Commission Administrative du Patrimoine Universitaire de Liege and the Council for International Organizations of Medical Sciences. P. B. Medawar, Chairman. Pp. xii+453. Illustrations. 50s. Oxford: Blackwell Scientific Publications Ltd. 1959.

It is very difficult to discuss this symposium from the point of view of a review, since this aspect of medical research is a comparatively new one and highly specialized at that. The symposium where these papers were presented was held in March 1959, at Liege, under the auspices of Unesco and WHO, where the participants met to discuss the results of their research and to coordinate and correlate their future work—an essential requisite for the speedy attainment of an object in research. The book covers a variety of subjects connected with the immunological problems of tissue transplantation, and will be of the greatest value to biologists working in this field. It will also be of considerable interest to the general surgeon and to everybody interested in progress in thi

fascinating field of medicine. Host intolerance is still an unsolved obstacle because, although tolerance may be induced in several ways experimentally, the methods are too fraught with risks to allow clinical application. Each difficulty which is overcome, furthermore, reveals several new problems to be solved; this makes research even more complicated.

This book should be of great service as a record of progress made, and it may well be a contributary factor to the solution of the biological problems of grafting.

C.N.B.

CORRESPONDENCE : BRIEWERUBRIEK

ANTISEPTICS

To the Editor: Your interesting editorial 'Antiseptics', in the *Journal* of 11 March,[1] discusses only two antiseptic agents, viz., hexachlorophene and ethyl alcohol 70%.

Trials undertaken by the Medical Research Council Industrial Injuries and Burns Unit and published recently in the *British Medical Journal*,[2] compared a number of antiseptic preparations for rapid action against pathogens deposited on the skin and against the normal skin flora. The results of the hand washing tests on resident skin flora showed that chlorhexidine 0·5% in alcohol was best with an 81·3% mean reduction in bacterial count, followed closely by alcoholic iodine with 80·7% reduction. 70% alcohol produced a mean reduction of 68·6%, with aqueous iodine and aqueous chlorhexidine following in that order. The authors conclude that, for rapid skin disinfection, the alcoholic solutions of iodine 1% and chlorhexidine 0·5% had approximately the same effect and were significantly more effective than the other antiseptics tested. Of these two agents, the authors indicated a preference for chlorhexidine since routine use has not yet been reported to cause sensitive reactions.

An Annotation on skin antiseptics in the *Lancet* in 1958[3] contains the following reference to hexachlorophene:

'In surgical practice, hexachlorophene is not suitable for preoperative skin preparation because a single application has little effect, and it is satisfactory for the surgeon's hands only if he is prepared to use hexachlorophene soap every time that he washes them, in the hospital and at home.'

This Annotation further stated that the quaternary ammonium compound tested and hexachlorophene had proved only slightly better than a five-minute soap and water scrub.

I quote from the last paragraph of this Annotation as follows: 'Perhaps the most valuable of the newer antiseptics is chlorhexidine. It does not irritate the skin even when used repeatedly; it is very active against almost all bacteria; and a single application is effective. Lowbury[4] has summarized the clinical applications of chlorhexidine which he considers a valuable skin antiseptic. The form recommended for application to the patient's skin before operation is 0·5% in 70% alcohol, and this seems to be suitable for rinsing the surgeon's hands after the customary soap and water scrub. At the moment chlorhexidine is perhaps the best compromise between bactericidal effectiveness and harmlessness to the skin.'

With reference to your comment that antiseptics 'will be largely inactivated by serum, blood, pus and necrotic tissue', I conclude with a quotation from 'Antiseptics in midwifery' from the *British Medical Journal*.[5]

'Consideration of antiseptics which can be used for midwifery, lead to the choice of nine for test under the same conditions. Two main types of test were used: prolonged (48 hours) and short (12½ minutes) contact in water and in the presence of protein and blood. The technical methods are described and the results, using seven of the antiseptics on *Ps. pyocyanea*, *E. coli*, *S. pyogenes*, B-haemolytic streptococcus group A, *Cl. welchii*, and *Cl. tetani*, are reported. Clinical trials of those selected on this basis were made. The relation of these experiments to practical midwifery is discussed. Of the two antiseptics selected for clinical trial, chlorhexidine, a new British compound, tried for 2½ years, was found satisfactory and recommendations made for it's use in watery solutions, obstetric cream, hand cream, and as an alcoholic solution suitable for instrument storage and skin preparations.'

K. P. Kitchin

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1. Editorial (1961): S. Afr. Med. J., 35, 195.
2. Lowbury, E. J. L. *et al.* (1960): Brit. Med. J., 2, 1039.
3. Annotation (1958): Lancet 2, 1164.
4. Lowbury, E. J. L. (1957): Practitioner, 179, 489.
5. Calman, R. M. and Murray, J. (1956): Brit. Med. J., 2, 200.

TELEGRAM TO PRIME MINISTER

To the Editor: I was amazed to see in the *Eastern Province Herald* that the South African Medical and Dental Council had sent a telegram of welcome to the Prime Minister, Dr. Verwoerd, on his return to South Africa from the Prime Ministers' Conference in London. What authority did the Council have for sending this telegram? The dispatch of such a telegram smacks very strongly of politics and is, if I may say so, without precedent. The functions of the Medical and Dental Council are quite clear and certainly do not include the dispatch of telegrams of welcome to Prime Ministers returning from Conferences.

I think that the profession as a whole should protest most strongly at this sort of thing and make it quite clear that anything like this is looked upon with the utmost disfavour.

L. E. Miller

Durban
24 March 1961

TELEGRAM TO PRIME MINISTER

To the Editor: From a report in the *Cape Times* of Tuesday 21 March it appears that a motion was passed at a meeting of the South African Medical and Dental Council agreeing to send a telegram to the Prime Minister 'as an appreciation of what he has done for South Africa.'*

I am astounded that a body with the status of a Court of Law should associate itself with an expression of opinion entirely beyond its mandate and prostitute its dignity to the dictates of politics. If individual members, such as the Deans of the faculties of Medicine mentioned in the report, wish to congratulate a politician, doubtless they are quite free to do so personally, but I find it most objectionable that the Council should permit itself to be the instrument of ingratiation with any Government.

Furthermore, as is obvious from the headline 'Doctors greet Verwoerd', the vast majority of the public cannot discriminate between the 'Medical Council' and the Federal Council of the Medical Association, and this action of the South African Medical and Dental Council entirely misleads the public. It might well cause contempt of a court which the profession holds in the highest esteem.

I trust that the Federal Council of the Medical Association will hasten to correct the false impression which has been caused, and dissociate the profession from futile political gestures.

V. H. Brink

National Mutual Building
Church Square
Cape Town
22 March 1961

[* The text of the telegram was as follows: 'The South African Medical and Dental Council bids you a hearty welcome on your return to your fatherland after your overseas visit.'—Editor.]

TELEGRAM TO PRIME MINISTER

To the Editor: There appears to be some confusion about the contentious telegram sent by the South African Medical and Dental Council to Dr. Verwoerd. Many practitioners and members of the lay public have enquired why the Medical Association has taken this stand on such a burning political question.

Without going into the merits of the issue any further, as a member of Federal Council I feel that the *Journal* and the Association should explain to the profession and to the public from whom the telegram actually emanated, and the difference between the Federal Council of the Medical Association of South Africa and the South African Medical and Dental Council.

A. A. Zabow

309 Voortrekker Road
Maitland
28 March 1961